PURCHASING

THE NATIONAL MAGAZINE FOR PURCHASING AGENTS

CAPTAIN S. D. ANDREWS, JR.

See Page 92

Industrial Purchasing Experience Applied to Army Buying

CONOVER · MAST PUBLICATION OCTOBER, 1943 35 CENTS PER COPY

"BAZOOKA"

DEVASTATING in fire power, yet so light that two men can carry and operate it, America's unusual "Bazooka" fires armor-piercing projectiles which can blast enemy tanks. This hard-hitting weapon is symbolic of our Nation's inventiveness and genius for mass production which is astounding the world.

With our Armed Forces urgently needing more and more war munitions, management everywhere is finding real help in keeping up output, by using Texaco Engineering Service and Texaco Petroleum Products. So effective is this combination proving that it is definitely preferred in many important fields, a few of which are listed in the panel.

A Texaco Engineer will gladly cooperate in the selection of the most suitable Texaco lubricants to increase the output of your plants. Phone or write the nearest of more than 2300 distributing points in the 48 States, or write to:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

THEY PREFER TEXACO

★ More Diesel horsepower on streamlined trains in the U. S. is lubricated with Texaco than with all other brands combined.

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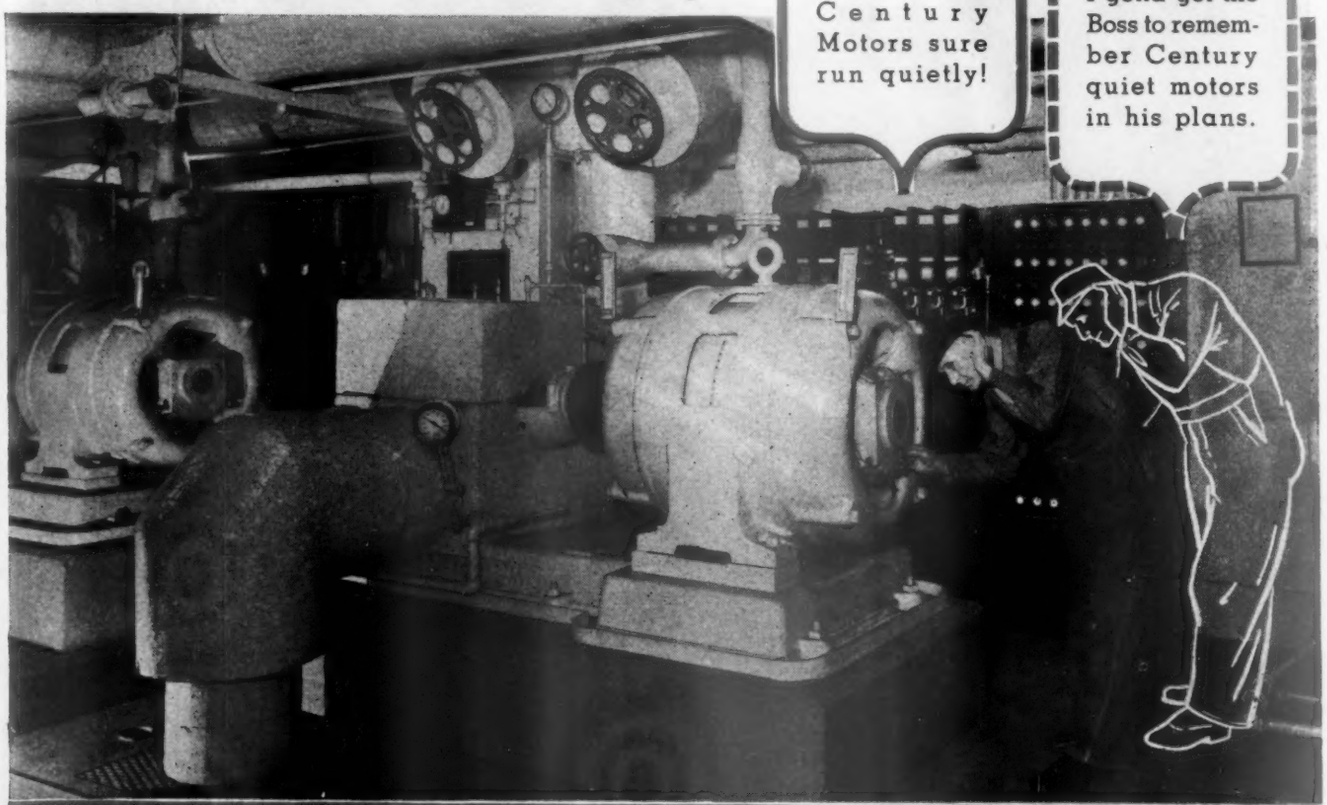
TEXACO Lubricants, Fuels and Engineering Service

TUNE IN THE TEXACO STAR THEATRE EVERY SUNDAY NIGHT — CBS ★ HELP WIN THE WAR BY RETURNING EMPTY DRUMS PROMPTLY

Take a Look at TOMORROW—*Today!*


Mr. Now:
You can say that again! Century Motors sure run quietly!
Mr. Postwar:
I gotta get the Boss to remember Century quiet motors in his plans.

CENTURY MOTORS Start *QUIETLY* and Run *QUIETLY*

There are many reasons for the exceptionally quiet performance of *all* Century Motors, no matter what the size. One is the close tolerances permitted in their construction — another is the unusual freedom from electrical and mechanical vibration — another is the engineering of Century's unique bearing bumpers which reduces chatter from any V-belt irregularities.

When driving pumps, compressors, and blowers, quietness is important to the mental comfort of workers — or customers. In machine tool applications, this freedom from vibration makes possible closer tolerances, faster production, and fewer rejects.

Quietness and freedom from vibration are but two of the many advantages resulting from Century's careful, experienced motor engineering. *Whatever* your motor requirements, it will pay you to remember Century Motors today and in your postwar plans.

CENTURY ELECTRIC COMPANY
1806 Pine Street St. Louis 3, Missouri

Offices and Stock Points in Principal Cities

One of the Largest EXCLUSIVE Motor and Generator Manufacturers in the World.

337

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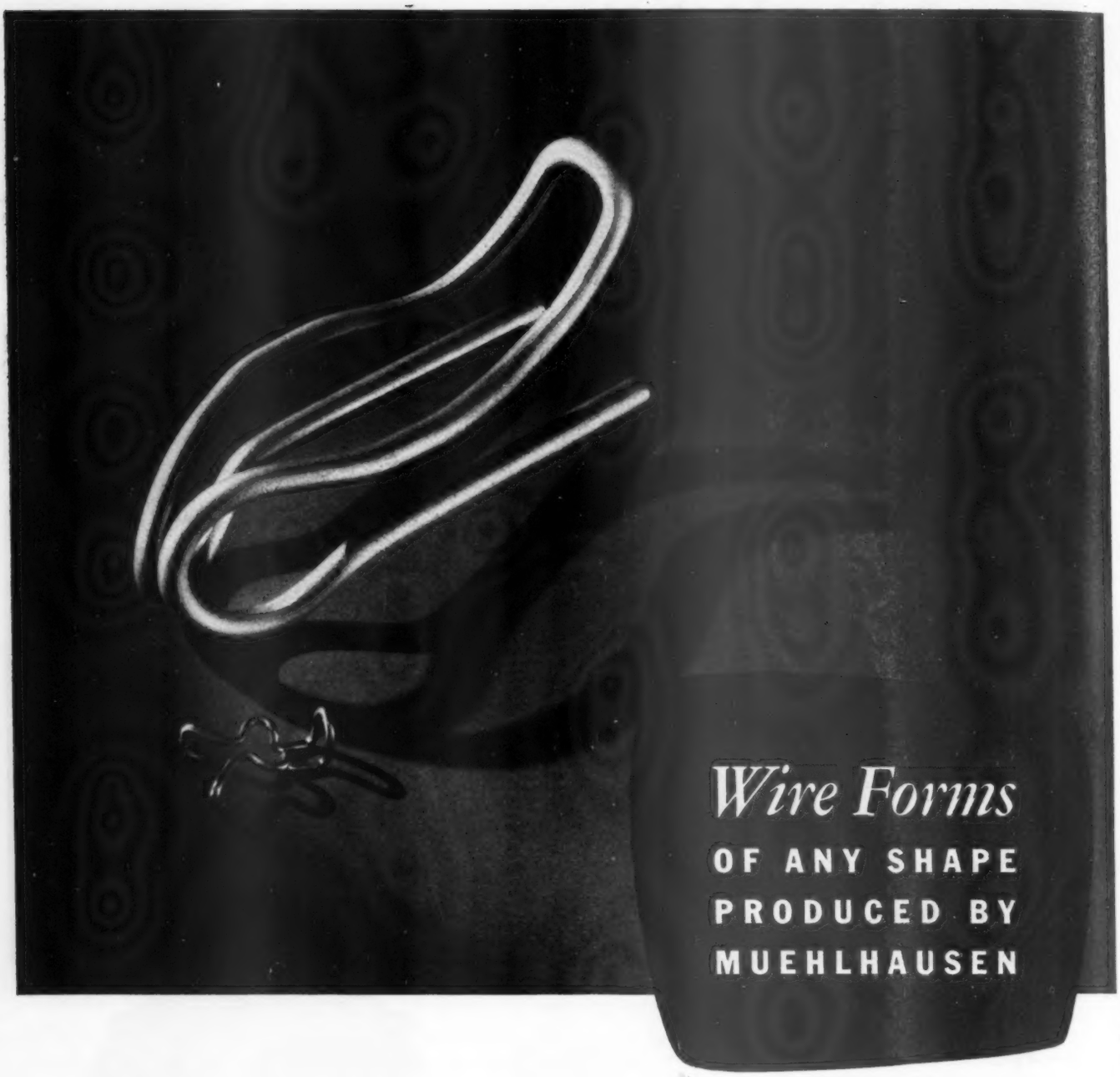


At first glance, the intricate designs of many wire forms look like the "doodlings" on an engineer's scratch pad; yet each twist and turn serves a necessary function—either that of cushioning, retaining, or joining. One Muehlhausen wire form may be used to cushion the huge reflector of a defensive searchlight; another may firmly grip the ceramic insulator in a power line circuit breaker.

Muehlhausen is currently producing a variety of wire forms for use in war products, the unusual requirements of which are being met by this company's experienced designers, skillful tool makers, and extensive fabrication equipment.

MUEHLHAUSEN SPRING CORPORATION
Division of Standard Steel Spring Company
675 Michigan Avenue, Logansport, Indiana

Leading product designers in every industry are consulting Muehlhausen engineers to secure springs of lasting efficiency.

MUEHLHAUSEN
SPRINGS
EVERY TYPE AND SIZE

Howard Coonley Points Out a Critical Situation

Howard Coonley, Director Conservation Division, War Production Board, stresses the critical cutting tool shortage situation in a letter to all industry. Here is what he says—

> "--the cutting tool situation is now so acute...that the War Production Board has launched an intensive campaign to establish definite tool care policies in as many plants as possible."

Conservation of cutting tools is sound practice, good business—at any time. Today it is of vital importance to conserve tools in order to meet the full demands for war production. Cutting tool control and usage methods established under peacetime conditions should be reviewed—stepped up to wartime requirements.

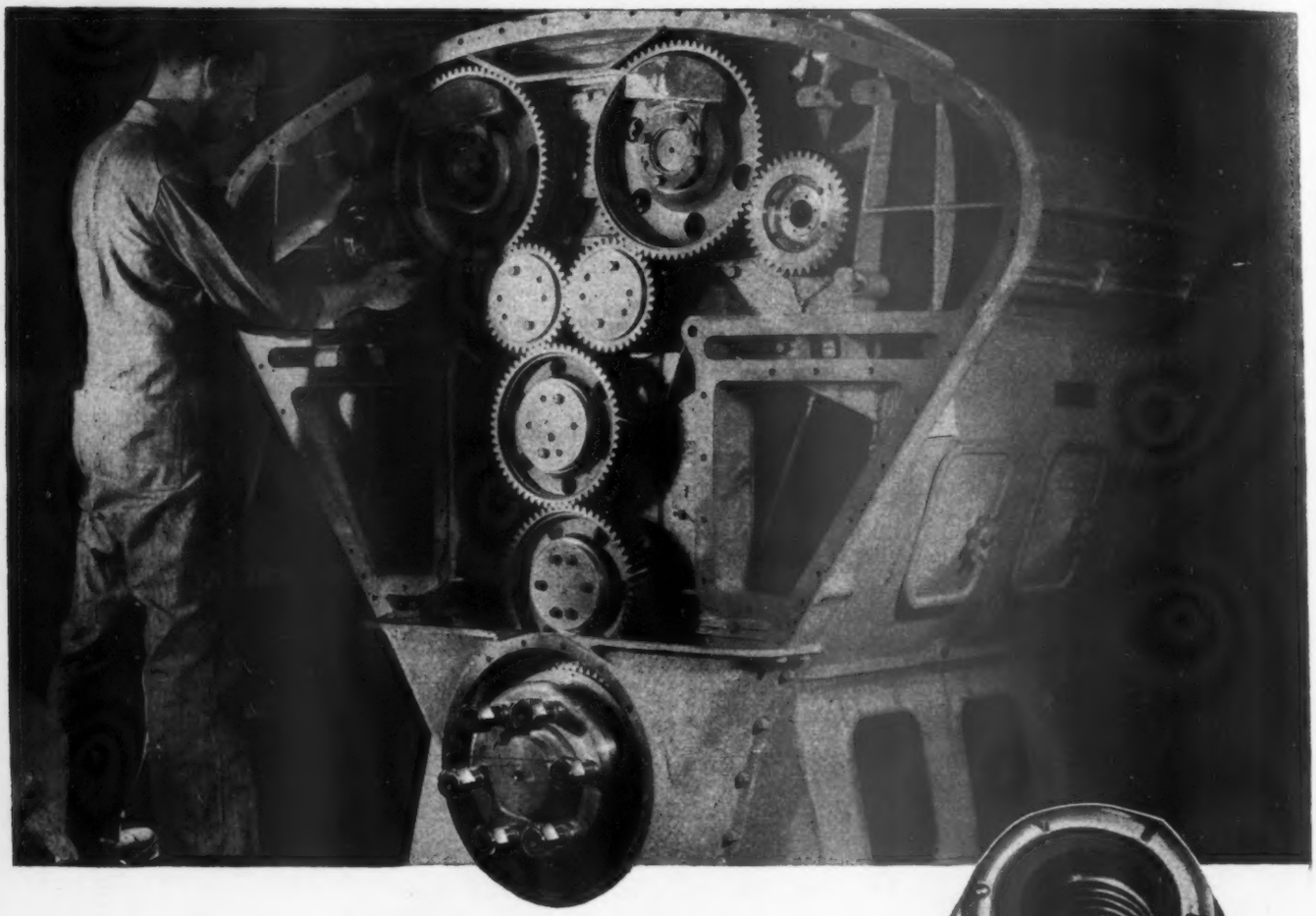
Help increase war output, help bring Victory closer, by conserving cutting tools—"they are weapons, treat 'em right."

ARMY E NAVY

INLAND STEEL COMPANY

38 S. Dearborn St. 50th ANNIVERSARY Chicago 3, Illinois

Milwaukee Detroit St. Paul St. Louis Kansas City Cincinnati New York



SIX NUTS THAT BRIDLE A THOUSAND HORSEPOWER

THIS is the business end of a powerful Diesel engine.

Well over a thousand horsepower spins through that coupling – through those six studs.

To connect that coupling, old-style lock fastenings wouldn't do. They couldn't both lock and be tightened to spread the load evenly. So studs failed.

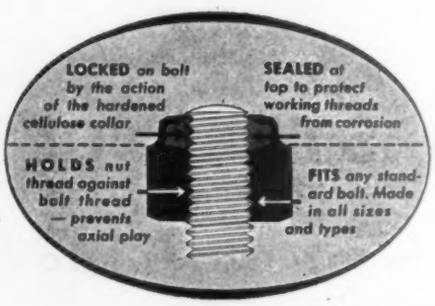
The solution shows in the photo – Elastic Stop Nuts.

With these fastenings, uniform pressure was obtained as well as complete security against nuts working loose.

In the peacetime production to come, equally puzzling problems will plague manufacturers.

And we are prepared to help. Our engineers who today are solving war production problems will be ready to share their wide experience with you.

Whenever you have a fastening job let us know. Our men will work with you on it and recommend the correct Elastic Stop Nut to produce a better product or to facilitate its manufacture.


LOCKED on bolt by the action of the hardened cellulose collar
SEALED at top to protect working threads from corrosion
HOLDS nut thread against bolt thread — prevents axial play
FITS any standard bolt. Made in all sizes and types

ELASTIC STOP NUTS

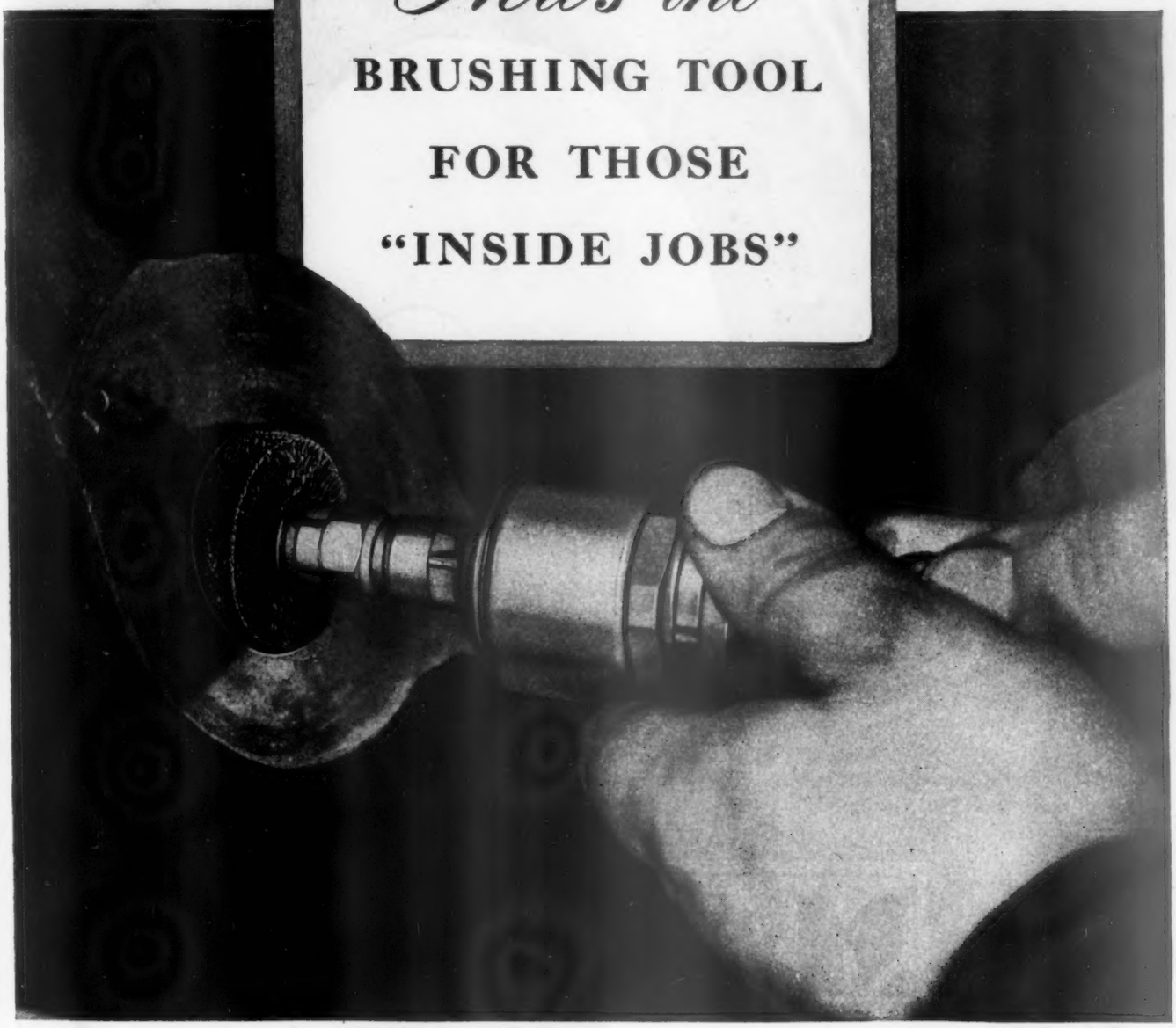
Lock fast to make things last

ELASTIC STOP NUT CORPORATION OF AMERICA, UNION, NEW JERSEY

ESNA TRADE MARK

Here's the

BRUSHING TOOL FOR THOSE "INSIDE JOBS"



HUNDREDS of manufacturers, faced with the problem of cleaning scale, burrs, rust and corrosion from interior surfaces of vital war material, have found the answer in fast, hard-working Osborn Ringlock Section brushing wheels.

Pipe, tubing, recesses in machined and fabricated parts—in fact all the tough, hard-to-get-at, internal areas—are just what this versatile brushing tool was made for. Its single retaining ring and locked-in construction permit high speed operation with either air or electrically-driven power tools and it can be mounted singly or in multiple setups.

For internal burring, cleaning, scaling and polishing, the Ringlock Section answers a universal need. It is made in diameters from 1″ to 3″ and of wire ranging from .0025 to .014, and can be had in tampico, horse-hair and synthetic bristle.

This fast-cutting little brushing wheel is just one of the many tools with which the Osborn Brushing Specialist in your district can help you speed your output and reduce costs of products for both war and peace. For help on specific war production problems get in touch with him today through *The Osborn Manufacturing Company, 5401 Hamilton Avenue, Cleveland, Ohio.*

WORLD'S LARGEST MANUFACTURER OF BRUSHES FOR INDUSTRY

Osborn Brushes

MACKLIN

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MACKLIN Wheels are made in all sizes and shapes in all grain and grade combinations to *"Protect Your Production."*

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Manufacturers of GRINDING WHEELS — JACKSON, MICHIGAN, U. S. A.

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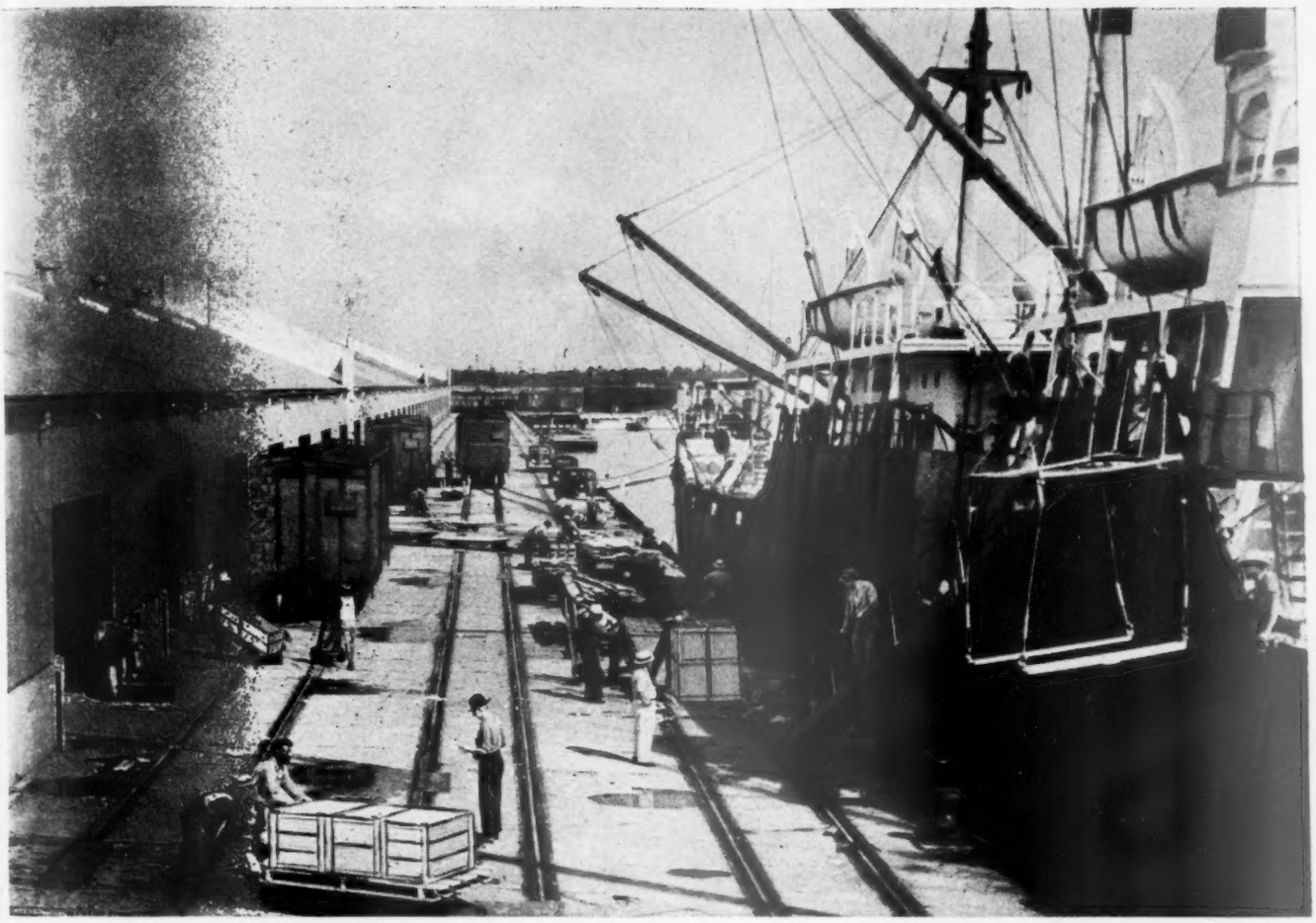

Let's Finish The Axis With Your Product and Permite Paints

EVERY additional shipload of American-made equipment and ordnance material brings closer the finish of the Axis. There is no need to let problems of proper painting or finishing slow up your production of war equipment.

With Permite Industrial Finishes, made to government specifications, we have helped many war production manufacturers secure faster drying, quicker application, speedier production. For instance, ammunition manufacturers using Permite Lacquer Enamels have been able to reduce to about two minutes the drying time required for handling after application.

Equally important savings in time or costs may be enjoyed by you through use of other correct Permite Specification Finishes. Clear and colored lacquers, zinc chromate primers, enamels, mixing varnishes, camouflage paints, rust inhibitors — all are included in the Permite Line. We also supply Permite Aluminum Paints on WPB allocation.

Quotations and Technical Information Submitted Promptly Upon Request.

ALUMINUM INDUSTRIES, Inc., Cincinnati, Ohio

PERMITE *Industrial FINISHES*

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☐ **1. CMP Booklet**—"A Simplified Explanation of Purposes, Principles and Procedures." Covers such topics as "What Materials are Controlled?"; "Are Your Products A or B?"; "How are Controlled Materials Distributed to Producers?"; "What Governs Deliveries?"; Buying MRO Supplies"; and "Priorities for Distributors." It also contains flow charts describing the functioning of producers of Class A and Class B products. Copy for the asking. Manning, Maxwell & Moore.

☐ **2. MACHINING ALUMINUM**—Machining characteristics, speeds, feeds, and cutters, drilling, boring, reaming, turning and facing, threading and tapping, and coolants, and other lathe technique—precision turning, machining with carbides, and turret lathe tools are covered in "Blue Chips." The Warner & Swasey Co.

☐ **3. MAGNETIC PULLEYS** — Forty-page handbook on the operation and maintenance of magnetic pulleys features information on trouble shooting, trouble prevention, repairs, recommended operating practices, and general maintenance. The publication includes pulley selection table, other data. Dings Magnetic Separator Co.

☐ **4. ELECTRONIC TUBES** — How they work. This is a text book you should have. Its 24 pages explain electronic tubes in an understandable way. It is illustrated with 117 sketches and photographs, and the eight basic types of industrial electronic tubes and their uses are described. General Electric Co.

☐ **5. LAMINATED PHENOLIC PLASTIC.** This is another practical text book you should have. It describes Dilecto, laminated phenolic plastic, its properties, its manufacture and its multitude of uses. Comes in sheets, rods and tubes, in wide variety of grades for specific uses, sizes and thicknesses. Dilecto can be sawn, drilled, milled, turned, punched, threaded and tapped, etc. In machining practically the same rules apply as in machining brass. Continental Diamond Fibre Co.

☐ **6. CRANES & HOISTS**—Servicing and maintaining. An excellent accumulation of "Know How" in 106 pages of generously illustrated text on electric crane and hoist maintenance and operation. Check No. 6 on the form and copy will be sent to you. Shepard Niles Crane & Hoist Corporation.

☐ **7. PACKAGING MATERIAL** for Metal Protection During Wartime. Special Bulletin gives facts on Saran Film, Type M, a new packaging material expressly designed for protection. Saran Film is a nearly colorless, transparent flexible sheeting with remarkable properties of strength, pliability and moisture proofness. It is claimed to be the most chemically resistant film now offered to the trade, and does not support combustion. There are two Saran Bulletins. Check No. 7. Dow Chemical Co.

☐ **8. MOTOR MAINTENANCE HANDBOOK**—Tells how to keep motors and generators operating continuously at peak efficiency without dismantling. Book also describes industrial electrical equipment, variable speed transmissions, machine tool accessories, wiring devices and tools and rechargeable battery for flashlights—in all 88 pages of practical information. Ideal Commutator Dresser Co.

☐ **9. SWITCHES.** Small, Light-Weight—Acro Snap switches, incorporating positive precision and frictionless operation in pin actuator, overtravel plunger, ribbed leaf, panel mount, aircraft type, open blade, midget, bracket and hinged leaf actuator types, are covered in ten-page catalog. Acro Electric Co.

☐ **10. PAYROLL TAX DEDUCTIONS**—Get one for the payroll department. No charge for it. This automatic device shows proper payroll tax deduction for any employee when proper settings are made as to marital status, wage range and pay period. It is named the Deduct-O-Graph. Geo. S. May Co.

☐ **11. CLEAR VIEW ENVELOPE** for Work Orders, blue prints, diagrams and other factory and office forms. Check No. 11 for free sample. Trade name is Kleer-Vu. Clear plastic face with bound leatherette edges on all sides. It is moisture proof and oilproof. Standard size is 10" x 12½"; can be made to suit special needs. American Plastic Products.

☐ **12. COOLANT FILTER**—Localized filtering unit. Will handle most of the commercial coolants such as soda water, light cutting oils, plain water and soluble oil emulsions, etc. Installed on compressed air lines it removes water, rust, pipe scale and other substances which clog valves. "Makes genuine contribution to accomplishment of finer grinding finishes." Fully described in 16-page bulletin. Fostoria Pressed Steel Corp.

☐ **13. GEARSHIFT DRIVES,** Grinders, Motors, Magnetic Polishing Lathes: New catalog describes and illustrates Lima Electric Motor Company's products. The magnetic polishing lathes are available in pedestal and bench types. Get copy for your production equipment file.

☐ **14. SPEED NUTS,** clamps and clips for aircraft. Get a copy of this new 20-page Tinnerman catalog for your fasteners file. Liberally illustrated to show varied types and uses. Tinnerman Products Inc.

☐ **15. ABSENTEEISM**—Manual outlines the methods which have proved particularly effective in reducing absenteeism at Summerill Tubing Co., which is said to have unusually low rate of absenteeism. Copy for the asking. Describes plan and illustrates forms used.

☐ **16. MILITARY PARTS PACKAGING** — Condensed resume of Military Parts Packaging requirements, based on various packaging specifications of the Ordnance Corps, Engineering Corps and Air Corps, as well as those used jointly by the Army and Navy, has been issued by the du Pont

(*Continued on page* 12)

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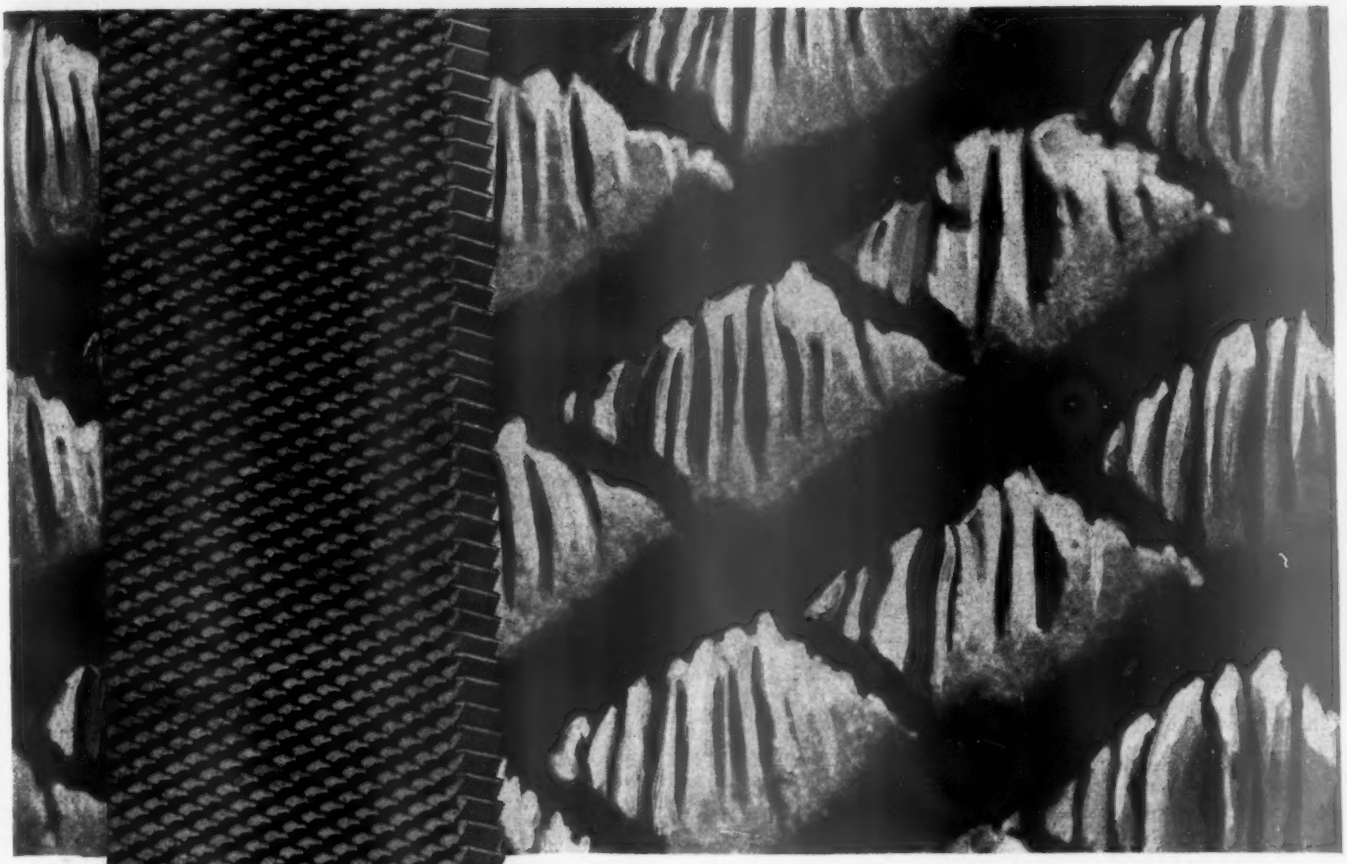
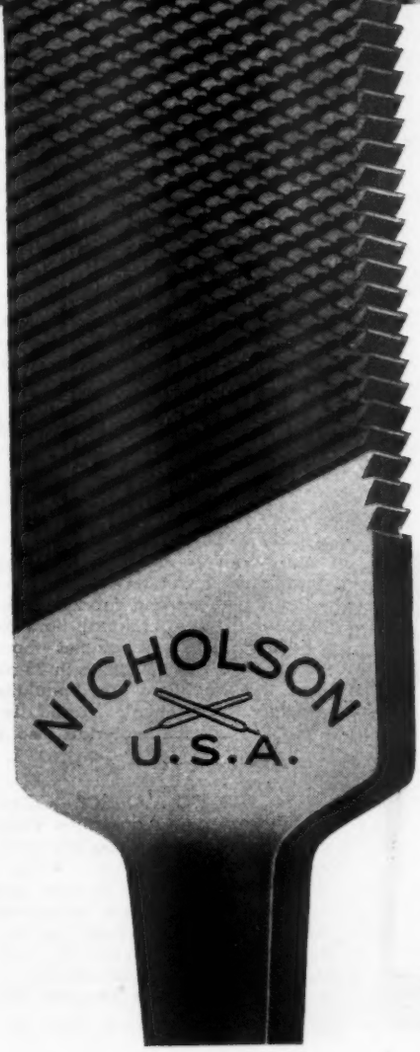
Four pages of "Know How" — 10-12-14-16





ITS BIG TEETH HAVE LITTLE TEETH

Serrated-tooth construction is one of the greatest file improvements in a generation! . . . An improvement minute in its visibility, but very evident in results. It is exclusive with Nicholson — *patented.*

Besides greatly increasing filing speed, *serrated-tooth* construction virtually gives certain Nicholson or Black Diamond double-cut files "second wind." As the tip of each tooth serration wears down, another brings up a fresh cutting edge. (There are about three times as many virgin cutting edges per square inch in a *serrated-tooth* file as in an ordinary-tooth file.)

All of which means: Longer, efficient file life. A greater number of effective strokes per file. More stock removal per stroke. . . . Increased production at less cost!

Through four generations of file-making experience, Nicholson has contributed many advancements. . . . In improved designs. In faster and more accurate methods of cutting file teeth. And in thoroughly controlling every step of manufacture. Whether you buy a few or a thousand at a time, you'll find these famous files so uniformly made and hardened that Nicholson can guarantee *Twelve perfect files in every dozen.*

FREE BOOK—A HELP TOWARD GREATER FILING PRODUCTION

"*File Filosophy*," by Nicholson, contains 48 profusely illustrated pages on many regular and special purpose files; on proper use and care of files; on how to select *The right file for the job.* . . . Plus additional information of inestimable value to purchasing and production heads, foremen, key mechanics. *Don't fail to write for a copy.*

NICHOLSON FILE CO., 28 Acorn St., Providence 1, R. I., U. S. A.

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NICHOLSON U.S.A. MADE IN U. S. A.

NICHOLSON FILES

FOR EVERY PURPOSE

"Know-How" Information, Continued

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Company. It lists the specification requirements of grades A. B. & C. wrapping materials and also features various methods of packaging.

☐ **17. SANITATION** and Maintenance tasks in Food Canning and Preserving Plants. Digest issued by Oakite Products, Inc. describes 97 tasks in sanitation routines, maintenance and related operations. It gives timely data on cleaning methods, germicidal techniques, descaling procedures, etc. On each of the 97 jobs, materials used and methods followed are discussed.

☐ **18. LABORATORY** Presses and Equipment. New catalog describes Hydraulic laboratory presses and equipment for testing and experimental work to obtain data needed in process or production problems. Pressures range from 10 to 200 tons on comparatively small areas, on die work, straightening or compression work. Presses have wide adaptability for die sinking, hobbing, extraction of liquids, hot molding, briquetting, testing and bending tests, etc. The Watson-Stillman Co.

☐ **19. MUSIC & MANPOWER** — This is name of 24-page booklet issued by Operadio Mfg. Co., on the subject of industrial music as a production factor. Get a copy of this book and bulletin "Plant Broadcaster" on plant broadcasting equipment.

☐ **20. BROACHING** — Special 16-page 3-color booklet entitled "A Quarter Century of Broaching Development," in addition to reviewing history of broaching, contains an article on broaching aircraft parts, makes announcement of a small press line, describes special rotary broaching machine and contains other interesting data. Colonial Broach Co.

☐ **21. PUMPS.** Turbine-Type and Centrifugal—Bulletin describes "types for every pumping problem"; turbine-type, centrifugal, horizontal and vertical non-clog pumps, mixed flow and sump pumps, deep well turbine pumps, condensation return units, etc. Aurora Pump Co.

☐ **22. DIESELS**—Booklet gives particulars on design, manufacture and service facilities applicable to the entire commercial line of marine and stationery Fairbanks-Morse Diesels. Looseleaf supplement gives detailed operating cost data for typical municipal plants. Average production cost is approximately ¾ cent per KWH on average running plant capacity factor of about 25%.

☐ **23. WAR POSTER**—Unusually forceful "Other Victory Taxes" poster in color, adapted from drawing made by member of Purchasing Department, for use on Factory or office bulletin boards is available from Wagner Electric Corporation. The theme is "Eyes, Arms, and Legs are Rationed, too!" How many copies can you use? Its size is approximately 17" x 22".

☐ **24 MARINE SIGNALS**—New catalog section covers marine line made to specifications of U. S. Navy Merchant Marine, as well as lines for general use. Signals consist of widely varying types of horns, trumpets, bells, buzzers, gongs, chimes and sirens. There are types for warehouse and dock use as well as for use on shipboard. Schwarze Electric Co.

☐ **25. WELDER'S GUIDE**—Vest Pocket Guide by picture and text shows what is wrong with different kinds of faulty welds, and how to correct these faults. It explains how to cut electrode waste; defines the three essentials of proper welding procedure, gives welding symbols, and contains a How-to-find list and handy reference information on decimal equivalents. The Hobart Brothers Co.

☐ **26. HEAT TRANSFER EQUIPMENT** for every application. Bulletin describes type of services and products of Young Radiator Co.,—oil temperature regulators, engine jacket coolant radiators, cabin heating coils, radiators, cooling and condensing towers, heat exchangers, evaporative condensers, unit heaters, coils, etc.

☐ **27. AIR CYLINDERS**—New 92-page catalog "should enable customer to determine the exact cylinder required for a particular job of pneumatic power movement." Blueprints and specifications are shown for 112 different air cylinders included in seven standard styles and also double end rod type cylinders. These are non-rotating, ranging in size from 1½" diameter cylinder bore to 14" bore. The Tomkins-Johnson Co.

☐ **28. ANTI-FRICTION BEARINGS** — The Whys and Wherefores of bearing designs and uses are graphically presented in 32-page booklet entitled "Facts About Anti-Friction Bearings." In easy-to-grasp language it presents a clear understanding of anti-friction bearings. You should have a copy. Ahlberg Bearing Co.

☐ **29. PRECISION SAWS** for contour cutting of any metal or material and their specific applications are described in booklet which also contains Job Selector Chart covering SAE and other steels, castings, copper, aluminum, nickel, alloys, and non-metals; data on saw widths, types of saws, etc. The Doall Company.

☐ **30. METALLIZING**—New 40 page catalog covers all phases of the metallizing process. It is termed an "encyclopedia on metallizing applications." The information is classified according to industry, and a section is devoted to the use and technique of metallizing. Another section is devoted to most frequently asked questions and answers thereto. New Mogul metallizing gun, electric bonder, and link which simplifies arc welding, and other equipment are described. The Metallizing Co. of America.

☐ **31. STEEL MAKING**—From ore to the cold finished steel bar. Booklet gives a brief resume of the subject of steel in an untechnical manner, answering questions as to the methods of production, the difference between Bessemer, open hearth and electric furnace steels, and the purpose of the different types of steels. It also treats Cold Finishing and Furnace Treating of Steel Bars, and various production procedures. La Salle Steel Co.

☐ **32. FLEXIBLE METALLIC TUBING** — New catalog deals with the general industrial applications of flexible metallic tubing, and describes types used in the conveyance of oils, gasses and liquids. Complete data is given on available fittings, both industrial and S.A.E. Pressure charts and other technical data are included. Titeflex Metal Hose Co.

☐ **33. VULCANIZED FIBRE** in sheets, rods and tubes and fabricated parts, and Spauldite laminated phenolic in sheets, rods and tubes and fabricated parts, flexible fibre gasket material, fibre board, and Spaulding Fibre receptacles—barrels, boxes cans etc. are described in 36-page book. Both the hard fibre and Spauldite can be machined like metal. Varied list of uses shown. Insulation materials also described. Spaulding Fibre Co., Inc.

☐ **34. PLASTIC FABRICS**—Colorful booklet illustrates and describes Velon, which combines "gorgeous beauty with lasting and no-soiling qualities." Velon has tremendous tensile and flexural strength; is practically impervious to water, most acids, alkalis and other solvents; is hard, tough, flexible, ductile, machinable, and is not inflammable. Velon fabrics may be had in any color. Can be cleaned with damp

(*Continued on page* 14)

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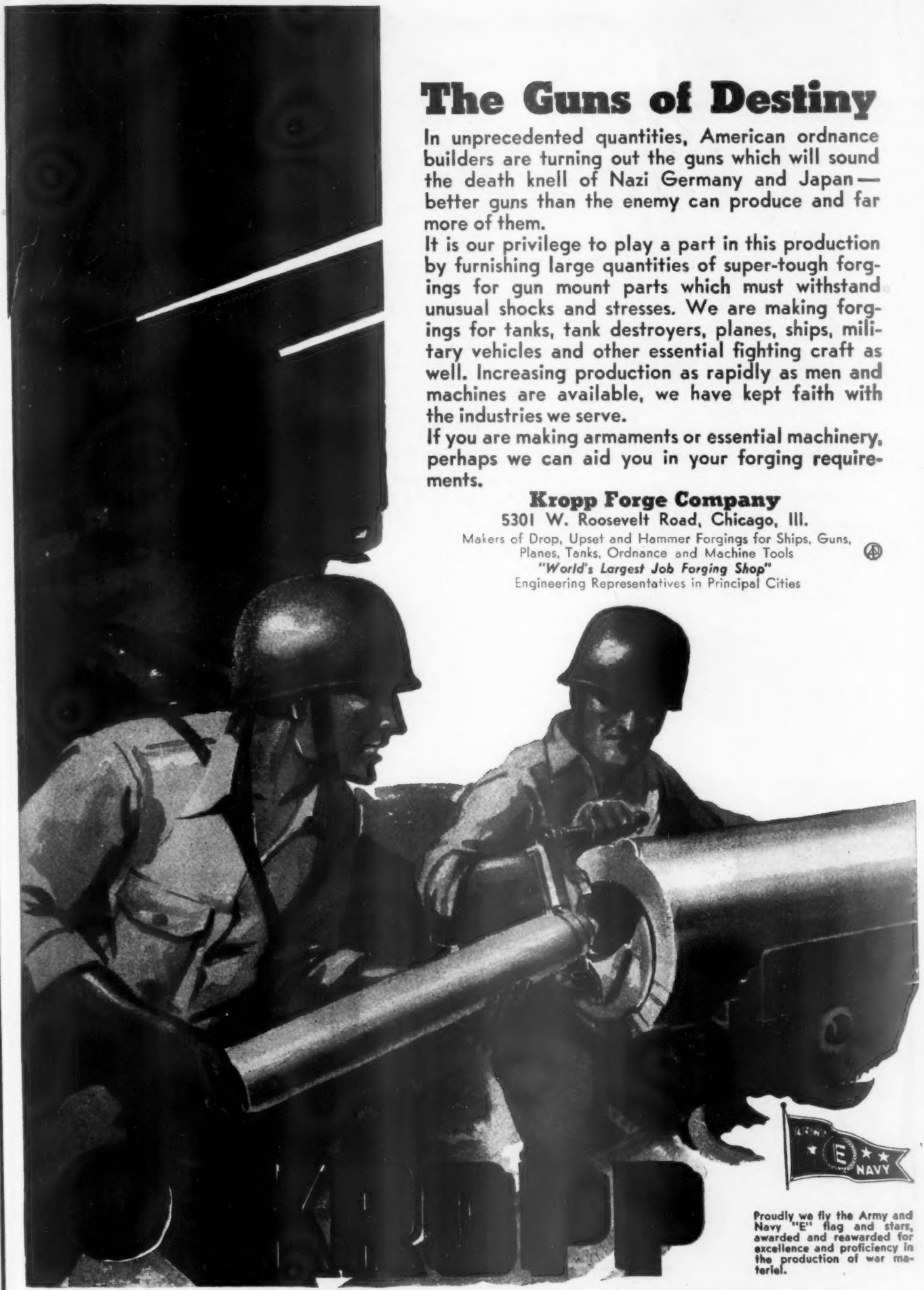

The Guns of Destiny

In unprecedented quantities, American ordnance builders are turning out the guns which will sound the death knell of Nazi Germany and Japan—better guns than the enemy can produce and far more of them.

It is our privilege to play a part in this production by furnishing large quantities of super-tough forgings for gun mount parts which must withstand unusual shocks and stresses. We are making forgings for tanks, tank destroyers, planes, ships, military vehicles and other essential fighting craft as well. Increasing production as rapidly as men and machines are available, we have kept faith with the industries we serve.

If you are making armaments or essential machinery, perhaps we can aid you in your forging requirements.

Kropp Forge Company
5301 W. Roosevelt Road, Chicago, Ill.
Makers of Drop, Upset and Hammer Forgings for Ships, Guns, Planes, Tanks, Ordnance and Machine Tools
"World's Largest Job Forging Shop"
Engineering Representatives in Principal Cities

ARMY E NAVY

Proudly we fly the Army and Navy "E" flag and stars, awarded and reawarded for excellence and proficiency in the production of war materiel.

"Know-How" Information, Continued

USE COUPON ON EACH PAGE

cloth. Illustrations in color show the fabric in various uses, including screens and women's wear and accessories, handbags, shoes, hats, dress goods, etc. Firestone Industrial Products Co.

☐ **35. HOISTS**—Zip-Lift Hoists and Hevi-Lift Hoists and Trav-Lift Cranes are described in four-page bulletin. The first is a simple electrical accessory "ready to go to work anywhere in a hurry," for spot handling, capacity 250 lbs. to 2000 lbs. Hevi-Lift Hoists are built in capacities up to 15 tons. The cranes are built in capacities up to 15 tons with double I-beam, and up to 5 tons with single I-beam construction. Harnischfeger Corporation.

☐ **36. ELECTRICALLY HEATED AIRBRUSH**—New type No. 5974 is said to be distinct advancement over other models in application of paraffin, heavy oils, honey, molasses, fats, butter, cheese, vaseline, glues, asphalt compounds, resins, etc. Easily adjusted for size and type of spray. Paasche Airbrush Co.

☐ **37. CUSHIONED ABRASIVES**—Comprehensive catalog describes rubber cushioned abrasive products—wheels, rods, sticks, tablets and special shapes. Fine-Tex abrasives are for use on softer metals and for producing special finishes. Tuff-Tex abrasives are for rougher finishing and work on hard metals. Brightboy Industrial Div., Weldon Roberts Rubber Co.

☐ **38. HYDRAULIC PRESSURE PUMPS** — New bulletin describes line of Hydraulic Pressure Pumps, illustrating the more popular models and important parts. Pumps are available in standard sizes from 3 to 200 horsepower for pressures of 1,500 to 10,000 p.s.i. and upward. Specifications table covers each model and size. Watson-Stillman Co.

☐ **39. WAR BOND DRIVE POSTERS**—Free. Two-color posters (44" x 22"), and single color posters (10" x 7"), suitable for use as handbills, envelope stuffers or window display, are available from Wickwire-Spencer Steel Co. without cost. Check No. 39 and show how many of each you can use.

☐ **40. WELDING IDENTIFICATION** Marker—Combination weld marking tool and chipping hammer styled the Symbol Hammer, is described in 4 page bulletin. Features keyed symbol in form of alphabetical and numerical combinations or outline symbols, to identify individual welders in crews up to 15,000. Marking tips are interchangeable, and bits are replaceable at chipping end. Atlas Welding Accessories Co.

☐ **41. CHIP BREAKER GRINDER**—Bulletin gives complete specifications for new high capacity, flexible chip breaker grinder. It also includes prices with and without pedestal as well as accessories available. Carboloy Co.

☐ **42. LIQUID AND POWDER** level controls. Bulletin describes Photoswitch electronic level controls for single level indication and control, on and off pump control at two levels, boiler feedwater control, and tank condensate signals. Equipment has no mechanical parts and is said to have unlimited life. Photoswitch, Inc.

☐ **43. LUBRICATING SYSTEM** for Bearings —Eight-page bulletin describes the Multival system for providing positive lubrication to a group of bearings from a central distributing block. Single connection is said to deliver exact measured charge of lubricant to as many as ten bearings at a time. The Farval Corp.

☐ **44. QUENCHING OIL**—Smart brochure just off the press describes Gulf Super-Quench which is described as the revolutionary new dual-action quenching oil. It is said to assure the maximum oil-quenched physical properties in steel with minimum distortion and cracking, making metals harder and stronger.

☐ **45. THREAD GRINDER**—Easy to read folder describes Precision Thread Grinder which is claimed to easily solve tough jobs where extreme accuracy is of the utmost importance. Landis Machine Co.

☐ **46. GASKETS, PACKING, SEALS**—New bulletin covers cork, synthetic rubber, cork-and-synthetic rubber, cork-and-rubber, fiber sheet packings, rag felt papers, and natural cork products. Gives Government specifications, forms and sizes and uses. Armstrong Cork Co.

☐ **47. PLASTICS, JET MOLDING**—Injection method of molding thermosetting materials is described in special article in Bakelite Review. Speed of curing is said to be but a fraction of the flowing and curing periods in compression molding, molded parts have excellent and uniform molding characteristics whether of thick or thin section; process is said to simplify the die problem.

☐ **48. VIBRATORY MATERIAL** Handling Equipment—New catalog describes complete line of electric vibrators for bins, hoppers and chutes, vibrating feeders, "weigh-flow" feeders for continuous flow feeding by weight, batch weigh machines, bag-weigh machines, concrete form vibrators, etc. It shows installations and applications of the various types of equipment. Syntron Company.

☐ **49. POWER TRANSMISSION PROGRAM** —This is a very interesting book. It outlines a planned power transmission program in a dramatic way, aimed at conservation of equipment, covering belt protection, inspection and salvage, and simplified maintenance of belts and other drive components. Book has been commended by WPB. Cling Surface Co.

☐ **50. INSULATION TESTERS** — Bulletin describes new "Megger" insulation testers, the first to be built in this country. The instruments are of the "Megger" generator and direct-reading ohmmeter type which operate simply by turning a crank and reading a scale. James G. Biddle Co.

☐ **51. PLASTACELE** Cellulose Acetate Plastic Sheets. New handbook just released describes in detail procedures and operations essential to the production of finished articles from this plastic substance. It is available in standard transparent aircraft sheets but may also be made in translucent and opaque colors and in pearl and mottled effects. Working procedures are similar to those used in the conversion of woods, metals and other plastics. Methods to be followed are set forth in the book. E. I. du Pont de Nemours & Co.

☐ **52. HUMIDIFIERS** — "Humidifiers in Industry" is the name of new bulletin describing the application of humidification in a wide variety of industries and the benefits it provides. Data is also included on the use of humidification in the control of dust, lint and static electricity, and for increasing human comfort. Armstrong Machine Co.

☐ **53. FIRE EXTINGUISHING** Equipment—New booklet describes the C-O-Two Fire Equipment line of portable and built-in carbon dioxide fire extinguishing equipment and smoke detecting systems. This includes hand extinguishers, "Squeez-Grip" valve, hose rack, reel and wheeled units, manual and automatic built-in systems.

☐ **54. ALUMINIZED STEEL**—"Armco Aluminized Steel," a new and concise booklet, is a guide to the use of aluminum-coated steel. It gives gage and weight limits and information on the qualities and characteristics of the recently developed sheet, which, the producers say, combines the

(*Continued on page* 16)

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10/43

Check each page of "Know How" — 10-12-14-16

Need more manpower?

RADIAL DRILL
Handles light drilling, tapping operations effectively. Drills to center of 62" circle. Spindle speeds 160 to 8200 r.p.m.

How to find it in your own plant

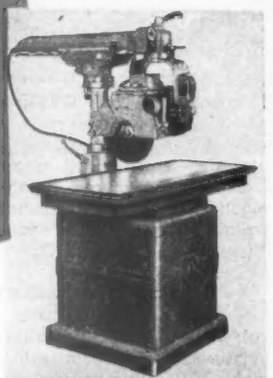
TODAY, although it is almost impossible to get more workers, it is often possible to get more *output* by selecting machines better suited to the tasks they perform.

Many manufacturers have substantially increased production by adopting compact, fast Walker-Turner Machine Tools in place of larger, more expensive units. Study the descriptions of the machine tools shown here and consider the possibility of speeding up output on operations within their capacities. Then send for catalog.

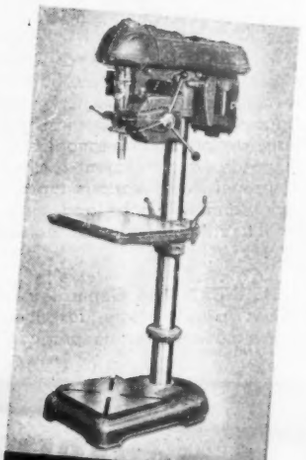
WALKER-TURNER COMPANY, INC.
13103 Berckman Street Plainfield, N. J.

METAL-CUTTING BAND SAWS
14" and 16" models. Speed range from 61 to 5300 s.f.m. for cutting practically any material from steel to wood.

POLISHING LATHE
For burring, polishing and hand-lapping operations.



METAL CUT-OFF MACHINE
Ball bearing sliding ram travels 21½". Cuts all types of materials at any angle.



15" AND 20" DRILL PRESSES
Bench and floor models available with or without power feed.

walker-Turner COMPANY, INC. PLAINFIELD, N.J. U.S.A.

MACHINE TOOLS

DRILL PRESSES — HAND AND POWER FEED • RADIAL DRILLS
METAL-CUTTING BAND SAWS • POLISHING LATHES • FLEXIBLE SHAFT MACHINES
RADIAL CUT-OFF MACHINES FOR METAL • MOTORS • BELT & DISC SURFACERS

"Know-How" Information, Continued

USE COUPON ON EACH PAGE

surface qualities of aluminum with the strength of steel. American Rolling Mill Co.

☐ **55. AIRPLANE WORK,** Angle & Flexible Drilling Attachments—Attractive catalog covers angle drilling attachments for use with portable electric and pneumatic tools, developed especially for working in close places in airplane construction. The attachments are claimed to be accurate, durable, and also interchangeable. Geo. A. Terry Co.

☐ **56. PLASTIC TUBING & FITTINGS**—Bulletin describes plastic tubings and fittings for wide variety of uses previously demanding such vital materials as aluminum, brass, copper, nickel and stainless steel. The bulletin lists technical data and physical properties, and safe working pressures. Elmer E. Mills Corp.

☐ **57. DIAMOND TOOLS** — Catalog features blade type tools for wheel dressing. Trade-style is Tru-Line Engineered Diamond Tools. Wheel Trueing Tool Co.

☐ **58. LIGHT REFLECTING FLOORS**—New book prepared in collaboration with various authorities on illumination, design and construction, deals with the subject of increased illumination obtained from white portland cement industrial floors, which increase lighting on underside work surfaces by 61%. Universal Atlas Cement Co.

☐ **59. "PROTECT YOUR SKIN"**—This is title of 8½" x 11" printed card for posting in washrooms and bulletin boards, telling workers how to prevent skin troubles. They are Free. How many do you actually require? Quaker Chemical Products Corp.

☐ **60. PLASTIC MOLDING**—Bulletin details custom molding facilities, and table shows the comparative characteristics of various compression-molded plastics, covering both thermosetting and thermoplastic materials. It provides a convenient method of checking properties of various types of plastics. Stock handles, knobs and pulls available are illustrated. Imperial Molded Products Corp.

☐ **61. INERT GAS** Generators—Eight-page booklet in two colors describes inert gas generators designed to produce a mixture of nitrogen and carbon dioxide with small percentage of water vapor and less than 1% of either oxygen or carbon monoxide. Generators are either gas or oil fired, and available in portable and stationary types for capacity range of 1000 to 35000 CFM at pressure of 3 lbs. Roots-Connersville Blower Corp.

☐ **62. HY-DRAULIC SLOTTER** — Bulletin describes 12" Hy-Draulic Slotter which offers advantage of hydraulic ram-drive, and hydraulic feeds, and is said to be precise, unusually heavy, powerful, and fast. Rockford Machine Tool Co.

☐ **63. PROPORTIONING EQUIPMENT** — Catalog covers automatic proportioning equipment. Operations described are treating water, food products oils and boiler water; blending ingredients in production of plastics, oils, etc.; diluting caustic or other concentrates; and sampling of end products and bulk shipments for continuous check. Proportioneers, Inc.

☐ **64. GRINDING WHEELS AND POINTS** —Non-technical summary of mounted wheels and points operations, including recommendations and operating rules are presented in booklet issued by the Grinding Wheel Manufacturers Association Safety Committee. Book includes illustrations of and data on standard shapes and sizes, and critical speed tables.

☐ **65. INDUCTION HEATING**—Scope, possibilities and advantages of induction heating for surface hardening, forging, annealing, brazing, soldering and melting, and induction heating units are covered by 8-page bulletin. Van Norman Machine Tool Co.

☐ **66. OVERHEAD HANDLING** Equipment —Generously illustrated catalog describes "eight points of advantage" of American Monorail material handling systems, and pictures detail switches, tracks, hangers, compact electrification and wide variety of industrial installations. The American Monorail Co.

☐ **67. INSULATING CATALOG**—New 60-page catalog covering the entire line of G. E. insulating materials is announced by the resin and insulation materials division of General Electric's appliance and merchandise department. The catalog lists and describes hundreds of items including varnished cloths, varnishes, Glyptals, tapes, cords, cotton sleeving, varnished tubings, mica, wedges, soldering materials, cements and compounds.

☐ **68. AIRCRAFT TUBING DATA** — New data sheets, illustrated, on Tapered and Formed Tubes, giving complete information on varied types such as spun-tapered, step tapered, upset end and swaged tubes, have been issued by Summerill Tubing Co.

☐ **69. EXTRAORDINARY PAPER**—Ask for sample of Resistall Index Bristol, No. 110—new white cotton cuttings. You can wash it like glass. It has unusual resistance to water, oil, grease, abrasion, extreme heat and even boiling. L. L. Brown Paper Co.

☐ **70. LABEL PASTE**—Grip-Tight is name of new label paste of the resin emulsion type, designed for permanently adhering paper labels to all surfaces and materials. Manufacturer states it can be used on hundreds of surfaces, finishes and materials, thus making it unnecessary to keep a variety of glues, cements and pastes on hand. Bulletin describes it in detail. Paisley Products, Inc.

☐ **71. RUBBERLESS WIRE** — Bulletin describes Hazapak, a building wire that is insulated with synthetic tape and further protected with heavy layer of moisture-proof compacted Kraft paper, plus a flame and moisture resistant fibrous covering. The copper conductor is the only critical material used in its manufacture. The wire has the approval of the Underwriters' Laboratories. Wire is available in all regular building wire sizes for 600 volt ratings. Hazard Insulated Wire Works Divn. of the Okonite Co. Hazapak Rubberless Wire, Bulletin 210. The Okonite Co., R. S. Hayes, Adv. Mgr., Passaic, N. J.

☐ **72. NEW DI-ACRO BENDER** — Bulletin describes Di-Acro Bender No. 3 especially designed for aircraft and marine work, for forming or duplicating all types of tubing, channel, angle, round, square, flat or any other shaped solid or open cross section material. It incorporates all features of smaller Di-Acro bender models. Has two-direction operation; radius capacity with conversion 9" (approx.) Accuracy guaranteed to tolerance of .001" in all duplicated work. O'Neil-Irwin Mfg. Co.

☐ **73. AUTOMATIC SAW** Sharpener — Sharpener is designed for quickly reconditioning hack saws, band saws, circular, rip saws and metal slitting saws. Bulletin states it is equally proficient in sharpening hand or power saws for either wood or metal. Howe & Son, Inc.

☐ **74. HEAT - TREATING FURNACES** — Brand new bulletin deals with performance, construction, uses, heating, and standardized models of furnaces for heat-treating tools, dies, parts, non-ferrous castings, aluminum forgings, glassware, and laboratory use. Furnaces are arranged with gas or electric heating systems and for temperatures up to 1250 deg. F. Despatch Oven Co.

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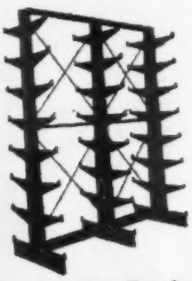
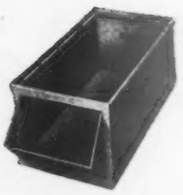
Check each page of "Know How"—10-12-14-16



Lyon Bar Rack—No. 28-136. Each section 36" wide, 31-1/2" deep, 79-5/16" high. First and additional section as shown. $58.25.

Lyon Work Bench—No. 5100. With Half Depth Shelf, Back Stop and Two End Stops. 60" long, 28" deep, $17.55. Drawer 12" wide, 16" deep, 4" high, $2.95 extra.

Lyon Bench Legs—No. 2401-11. 28" x 32-1/4". $2.95.

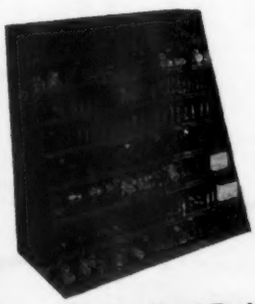


Lyon "RB" Materials Handling Container—No. 445F11. 10" x 20" x 8" —16 gauge steel. $1.55.

Lyon "L" Materials Handling Container —No. 410F16. 11" x 22" x 6"—16 gauge steel. $0.95.

Lyon "O" Materials Handling Container —No. 425F11. 11-13/16" x 22" x 7-5/8"—18 gauge steel (with runners). $1.75.

Lyon "H" Materials Handling Container —No. 421F14. 12" x 18" x 6"—18 gauge steel. $1.60.



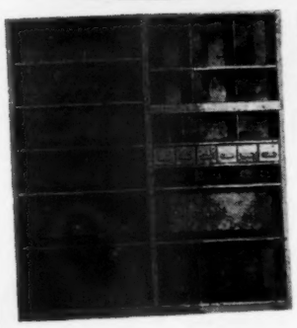
Lyon Sloping Front Tool Storage Unit—No. 10-1. Has 88 openings on eight shelves. 34-1/2" wide, 17-1/2" deep, 37-5/8" high overall. $24.25.

Lyon Portable Tool Stand—No. 2970-22. With Top, Two Shelves, Casters and 480-14 Drawer. 24" x 24" x 37-1/8". $12.00.

» » Quick *ANSWERS TO YOUR WARTIME Production and Storage PROBLEMS . . .*

The LYON Production Units illustrated and priced above will help you get your war jobs done faster and better. They are engineered to save floor space, reduce fire and accident hazards, protect tools and parts against breakage and loss and save labor! *All of these units are available for industrial use on satisfactory priority.* Mail coupon for quick action!

We can give war plants PROMPT DELIVERY on all the LYON Engineered Wood Storage Equipment, illustrated below. Users everywhere say it's the strongest, most practical and convenient equipment available today. Check and mail coupon for catalog and prices.



Lyon Adjustable Wood Shelving. Open and closed types. Shelving adjustable every 3" vertically and horizontally by hand. Complete assembly requires only one tool—a screw driver! Quickly set up by inexperienced help.

Lyon Shoprobes. Safe, convenient mobile storage for workers' clothing. Takes up less floor space per person than the area covered by a man's hat. Especially suited to industries where personnel fluctuates and compact, low cost clothes storage is a prime requirement.

Lyon Storage Cabinets. Attractive in design. Sturdy in construction. Equipped with four full-width shelves adjustable on 6" centers. Immediate delivery.

Lyon Wardrobe Cabinets. Equipped with full-width shelf for hat storage and full-width coat rod. Also combination type with full-width top shelf, coat rod and space for coats, and four half-width shelves for storage. Immediate delivery on both types.

Lockers. Single Tier and Double Tier Models in section 2 and 4 lockers wide.

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Tailor-made to Fit Your Operation

Strict specification requirements don't crowd out the touch of genius that goes into all Egyptian "spec" finishes.

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Take Egyptian's AXS-736 Rev 1 for cartridge cases, percussion primers and other steel surfaces . . . it's on the beam with the Ordnance Dept. and it fits your own set-up as though it were made to order for you. Extra hard, extra clear. Flexible in application. Dries for handling in 10 minutes. Bake at 350°F for half an hour, or 400°F for 20 minutes.

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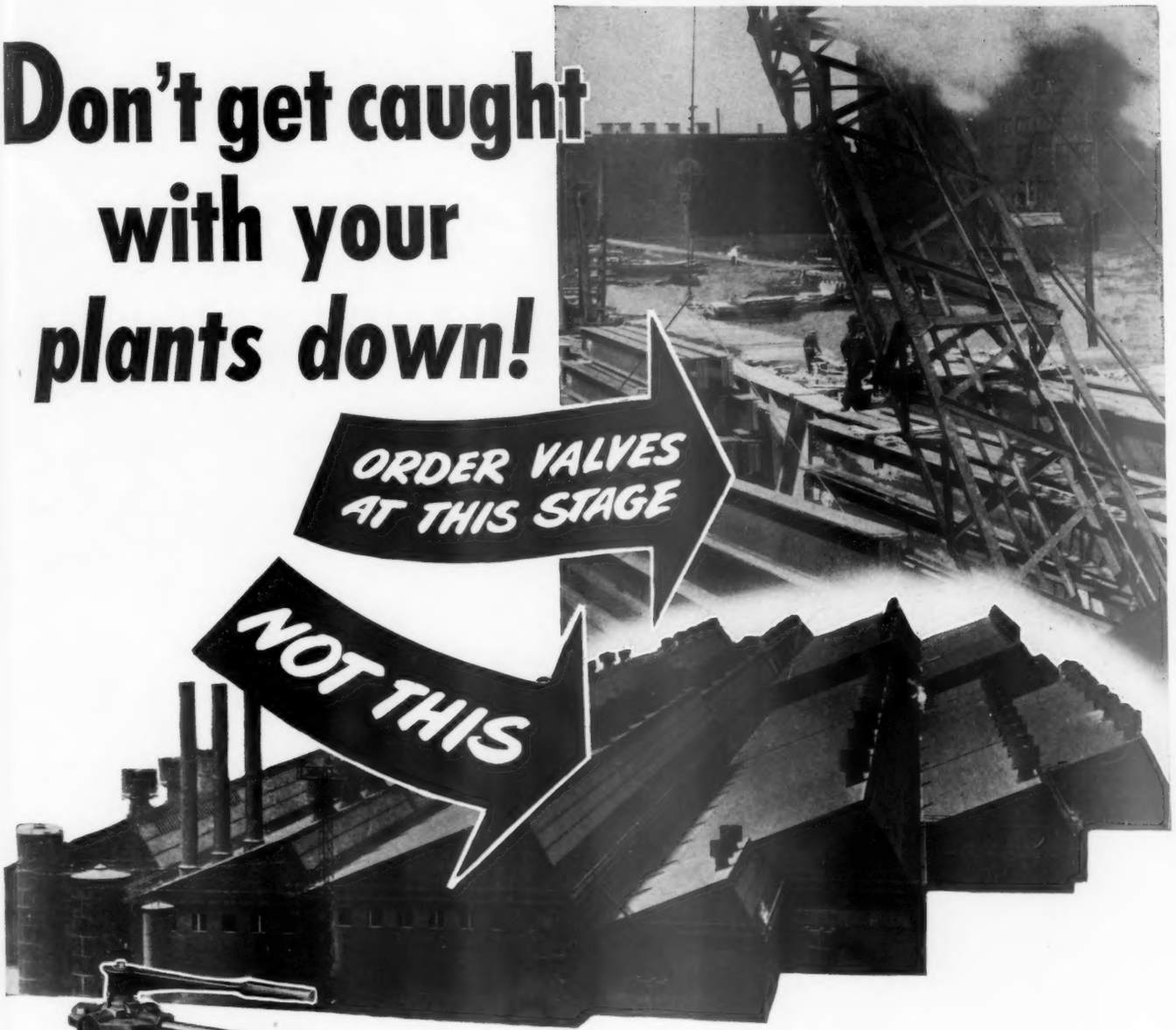


Here's *plain talk* about the so-called valve shortage.

From the start let's face the fact that valves are *hard to get.* But *you* have to get them . . . and *we're* working the clock around to see that you do.*

On time? When you want them? That's a different story . . . *and the happy ending is up to you!*

Positively there is *no valve shortage* . . . only a shortage of *time* to fill everyone's requirements *at once.* Ask us to fill immediately an order for ten or a thousand special specification valves, on the highest possible priority (not a directive), and we'd have to say "sorry." Give us the same order for valves you know NOW will be needed some months hence and we may even "beat the promise."

The answer to the "valve shortage" problem is this simple: *your* purchasing practices may need to be revised as much as *our* production procedure has been! The decades-old habit of ordering valves, pipe and fittings *last* must be *reversed.*

Until the valves are in the line the plant stays "down." Order at the blueprint or construction stage... not when the roof's on!

*(*Production increased nearly 800% in 12 months*).

Maritime's two-flag, highest production award to our men and women making valves for the Victory Fleet.

Reference Book No. 38 shows standard types, sizes, and uses of Homestead Valves. Write for your free copy now.

HOMESTEAD VALVE MFG. CO.

P. O. BOX 93 . . . . . CORAOPOLIS, PENNSYLVANIA

COLOR COMES TO CARBIDE!

A NEW SERVICE TO FIRTHITE USERS

Firth-Sterling announces **"COLOR-BRANDING"** —a new way of marking FIRTHITE Sintered-Carbide Tips and Tools so that the user can determine the grade of carbide at a glance . . . clearly . . . unmistakably.

Eight different "colors" now appear on FIRTHITE unmounted Tips: red, white, blue, green, yellow, brown, black, purple.

These unmounted Tips reach the user already color-branded on the outer end. After brazing, the user simply paints on the tool shank the color that appeared on the **Tip** before it was brazed.

The handy FIRTHITE **Color Chart** is available to users on request. This chart is mounted for hanging on the wall. It is a quick-reference guide to the selection of FIRTHITE Sintered-Carbide Tips and Tools.

Firth-Sterling Steel Company

OFFICES: McKEESPORT, PA.-NEW YORK-HARTFORD-PHILADELPHIA-CLEVELAND-DAYTON-DETROIT-CHICAGO-LOS ANGELES

8 Firthite Grades NOW "Color Branded" FOR

QUICK, EASY, SURE IDENTIFICATION

(For fuller descriptions of these grades, see pages 10 and 11 of Firthite Users' Handbook—or consult a Firthite Engineer.)

HA — **The peak-production carbide** for finishing hard, abrasive irons, non-ferrous and non-metallic materials. Used for turning, facing, sawing, boring, and reaming.

TA — **The general-purpose carbide** for cutting all types of steel in high-speed production. TA machines both ferrous and non-ferrous materials, such as aluminum.

T-04 — **The heavy-duty carbide** for coarse feeds, heavy and interrupted roughing cuts. Closest approach to a universal grade. Machines armor plate, softer steels, cast iron, etc.

T-89 — **The special-purpose carbide** for rough turning shells, etc. Withstands shock and jump cuts. T-89 is resistant to corrosion, erosion, heat, wear, and chip cratering.

T-16 — **The super-speed carbide** for light, rapid finishing of harder steels, shells, etc. T-16 is especially suited for "Hyper-Milling" of heat-treated alloy steels.

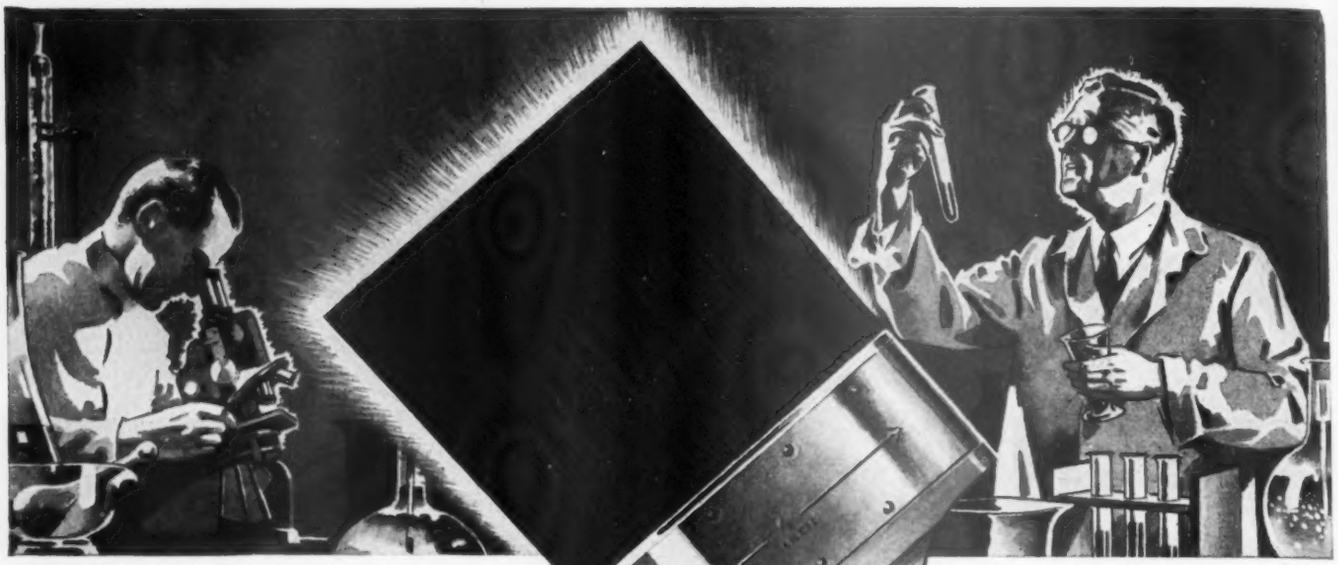
T-31 — **The precision-work carbide** for lightest, fastest, shallow cuts on hard, alloy, and treated steels. Hardest, most wear-resistant grade for precision boring, etc.

HC — **The carbide for hogging cuts** on soft materials at slow speeds. Excellent for skiving brass and grooving aluminum-alloy pistons. Withstands impact, vibration, abuse.

H — **The average-conditions carbide.** Most dependable grade for general use in roughing softer metals and less abrasive non-metallic materials at moderate speeds.

Firth-Sterling Steel Company

OFFICES: McKEESPORT, PA.-NEW YORK-HARTFORD-PHILADELPHIA-CLEVELAND-DAYTON-DETROIT-CHICAGO-LOS ANGELES



After Years of Laboratory Work and Extensive Testing "Pittsburgh" Now Offers

NEOCETA*

SYNTHETIC BRISTLE BRUSHES

Comparable in Quality and Performance to Brushes Made with Pure Natural Bristle

"Pittsburgh" scientists started their experiments two years before Pearl Harbor. They had instructions to continue their research work until they had developed synthetic bristle brushes which would be as efficient in performance as those made with the best natural bristles.

After three years, they have succeeded in meeting the specifications. As a result, "Pittsburgh" now offers America's first full line of synthetic bristle brushes. Repeated tests prove that these Neoceta brushes compare favorably with any pre-war brush you have ever used.

Everything You Ask for in A Paint Brush!

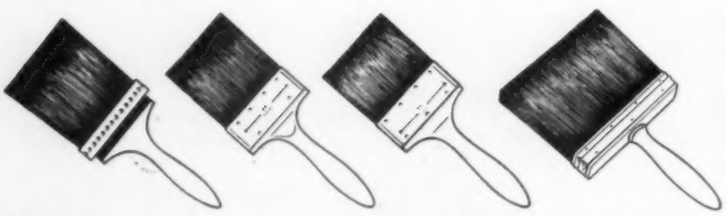
Neoceta brushes are highly practical and workable. Examine this bristle under a microscope and you will find that its taper is very similar to a natural bristle's. This allows paint to flow evenly and brush on smoothly. Neoceta brushes hold as much—*or more*—paint as pure bristle brushes and rival them in durability, spreading ability and the character of the film they produce. Here, in short, is a product that stands squarely on its own merits.

Availability

Winning the war comes first! Brushes of Neoceta are now available to the Army, Navy, or contractors for war materials for the Armed Services.

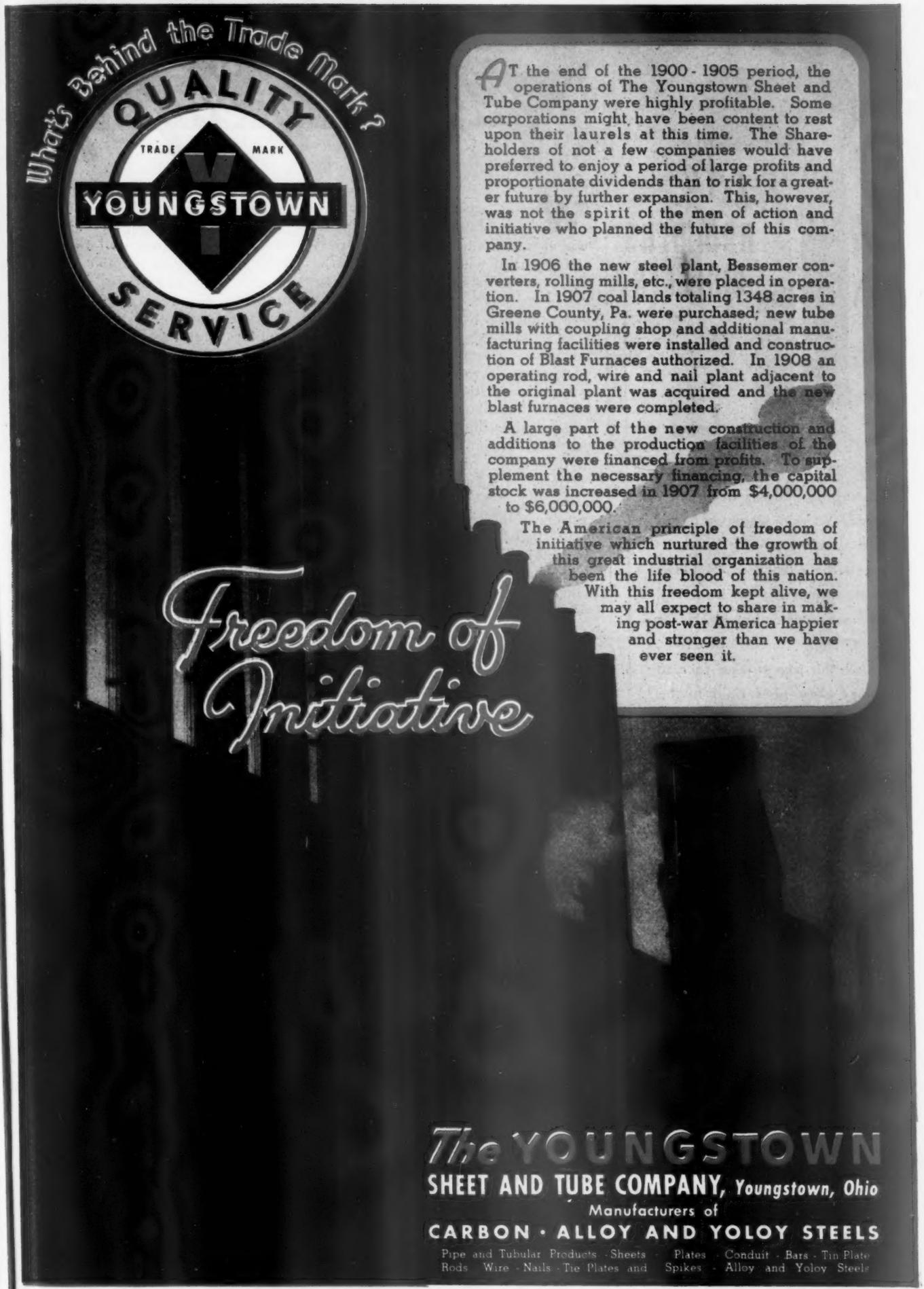
Bristle brushes, made and distributed in accordance with W. P. B. regulations, are also still available, with the necessary priority, through "Pittsburgh" branches everywhere.

**Trade Mark Reg. U. S. Patent Office No. 397,100*



PITTSBURGH PLATE GLASS COMPANY

NEOCETA brushes are manufactured by the creators of famous *Gold Stripe* brushes



AT the end of the 1900 - 1905 period, the operations of The Youngstown Sheet and Tube Company were highly profitable. Some corporations might have been content to rest upon their laurels at this time. The Shareholders of not a few companies would have preferred to enjoy a period of large profits and proportionate dividends than to risk for a greater future by further expansion. This, however, was not the spirit of the men of action and initiative who planned the future of this company.

In 1906 the new steel plant, Bessemer converters, rolling mills, etc., were placed in operation. In 1907 coal lands totaling 1348 acres in Greene County, Pa. were purchased; new tube mills with coupling shop and additional manufacturing facilities were installed and construction of Blast Furnaces authorized. In 1908 an operating rod, wire and nail plant adjacent to the original plant was acquired and the new blast furnaces were completed.

A large part of the new construction and additions to the production facilities of the company were financed from profits. To supplement the necessary financing, the capital stock was increased in 1907 from $4,000,000 to $6,000,000.

The American principle of freedom of initiative which nurtured the growth of this great industrial organization has been the life blood of this nation. With this freedom kept alive, we may all expect to share in making post-war America happier and stronger than we have ever seen it.

The YOUNGSTOWN
SHEET AND TUBE COMPANY, Youngstown, Ohio
Manufacturers of
CARBON · ALLOY AND YOLOY STEELS
Pipe and Tubular Products · Sheets · Plates · Conduit · Bars · Tin Plate
Rods · Wire · Nails · Tie Plates and Spikes · Alloy and Yoloy Steels

Rawhide HAMMERS MALLETS

Carefully made, accurately balanced, with weighted heads where extra striking power is needed. Strike forceful blows without marring or battering, without recoil or bounce. Never split, chip, "smear" or crack, retain this true striking face so every blow goes right to the target . . . gets work done. Long wearing, mechanically cured, coiled Rawhide faces far outlast soft metals, plastics, wood or rubber.

Replaceable Heads

Replaceable Insert Faces are available for C/R Hammers . . . make each a "lifetime" tool.

C/R Hammers and Mallets are classified as *essential tools* for the manufacture and maintenance of aircraft and other military material.

Write for Catalog Sheets

CHICAGO Rawhide MFG. CO.
1294 ELSTON AVE. ★ CHICAGO, ILLINOIS.

F.O.B. filosofy of buying

WITH becoming modesty, we hope, but with frank pride which we wish to share with all purchasing men whose work and position in industry this publication exists to serve, we pass along the news that for the second successive year PURCHASING has been honored in receiving one of the Industrial Marketing Awards for Editorial Achievement, for the best series of articles appearing in the business press during the past year. We are gratified that both awards have been in recognition of editorial effort directly contributing to the war effort —in 1941-1942 for our series on the conservation of materials, and in 1942-1943 for the series "Red Tape Must Go!" It is another bit of evidence showing the important part which purchasing plays in our great national wartime program. Our sincere thanks are extended to the many purchasing men who helped, directly and indirectly, in making these articles possible.

• •

GLAMOR has at last entered the purchasing field. Patricia Fleck of Seattle, who last year won the title of "Miss National Defense", is now serving as a Purchasing Agent for the Army, stationed at San Francisco with the particular assignment of buying the heating equipment for Army construction projects in that district. On the occasion of a visit to the home town a few weeks ago to celebrate her 21st birthday, the Seattle *Star* became somewhat lyrical on the subject of this charming and patriotic local daughter and recent U. of W. co-ed. But in citing her claims to fame, the editors suddenly grow cautious and throw in a lot of qualifying phrases with the result that her title finally emerges as "the prettiest and youngest army Purchasing Agent *for the United States Army Engineers on the west coast*" —which sounds suspiciously like some of those "Girl we'd rather . . ." titles that the servicemen are bestowing on Hollywood favorites on the radio programs. This cautious journalism, however, suggests that there may be other young and glamorous PAs deserving of similar recognition. After all, there are other branches of the service than the Engineers and other sections of the country than the west coast. Any candidates?

• •

AND by the way, it might be interesting for purchasing men to express their preferences on some of these points:

Supplier whose contract we'd rather renegotiate.

Supplier to whom we'd rather send the first cancellation.

Salesman we'd rather see come up before our Selective Service Board.

Supplier we'd rather see in the role of customer.

Salesman we'd rather.

• •

OCCUPATIONAL hazards are constantly changing. The latest diseases affecting Purchasing Agents are reported as "inventory jitters" and "termination jitters". Both ailments are approaching epidemic proportions.

• •

BEST prescription we have seen on the subject comes from George Renard of N.A.P.A. It is particularly appropriate in view of that other mild mania known as "post war planning". Dr. Renard's advice is succinctly stated: "These are problems to work on, not to plan for."

• •

CMP, the master plan which was to end all muddling and then—perhaps inevitably—turned out to be the biggest muddle of all, appears to have weathered its shake-down cruise and started on the course for which it is

really intended and adapted. The recent reports are enlightening and encouraging. Third quarter requests for materials by Claimant Agencies were slashed by 25% and more. Fourth quarter requests came through with only a 13% reduction, and unplaced orders for plates and shapes, the tightest spot in the whole program, are at new lows in both number and volume, representing less than 3% of estimated production for the balance of the year. This modest deficit is regarded as "manageable" even though it will take some intensive planning.

• •

THOSE in charge of CMP assure us that the tinkering stage is past, and the emphasis from here in will be on administration and enforcement, to make the plan work. One of the first crack-downs was directed, not at industry, but at the Claimant Agencies themselves, who can no longer override allotments by issuing production directives to the mills on their own account. That was the sort of thing that made priority ratings meaningless and wrecked whatever chance the priorities system had of success, and it is well that it is being nipped in the bud. The CAs are permitted to do a bit of horse trading among themselves, but the Requirements Committee is in there as umpire, armed with the final authority and determined to see that the game doesn't degenerate into a free-for-all.

• •

THE manpower problem at our colleges and universities was greatly relieved when OPA sent the professors home a few weeks ago. Business in general heartily welcomes the vacation from their academic supervision. There's nothing like education, but theory and discipline do not constitute a well rounded curriculum. They can no longer write the orders, but there isn't any rule against their writing books, and F.O.B. expects a rash of erudite literature on the control of benighted industry to break out during the next few months. But we won't have to read the books.

• •

ANOTHER slogan which appeals to us, directed at the problem of absenteeism, reads as follows:

Absence Makes the War Grow Longer.

Q. What are Machine Screw Nuts?
1. Chamfered and trimmed for good appearance...
2. Free running threads for spin-on assembly...
3. Accurately and uniformly made sides to fit all standard tools...
4. Uniformly centered holes.
1. Smoothly finished sides providing snug wrench fit...
2. Burr-free thread for speedy assembly...
3. Accurately squared corners for good appearance...
4. Smooth top and bottom prevents marring of work.
Machine Screw Nuts, Hex and Square, by no means the largest in size of the varied line of metal fastening products we manufacture. But no matter what the size of the product, its essential characteristics are maintained to uniformly high standards. Such production is the result of long and varied experience in meeting the needs of hundreds of users in scores of industries.
The General Screw Manufacturing Company manufactures nuts, screws, and bolts—both standard and special—in a wide variety of styles, metals and finishes. Cap Screws, Machine Screws, Carriage Bolts, Machine Bolts, Stove Bolts, Cold Punched and Hot Pressed Nuts.
GENERAL SCREW
Manufacturing Company
1238 W. Monroe St., Chicago 7, Ill., U.S.A.

Dozens TO MEET

PROMISE NEW ECONOMY

YOUR war-plant customers have *individual* lighting problems. No two are exactly alike. So the wide choice of styles and designs in *Certified* Fluorescent Fixtures will enable you to meet each customer's exact needs. And by doing that, you will not only be helping the war effort, but will be building good will and friendships for the post-war period.

Many Fleur-O-Lier and RLM manufacturers are making these certified fixtures—some of which are shown here. All of them comply with WPB conservation orders. Each bears a certification tag which is your customer's assurance of efficient, dependable service.

A TRIUMPH OF WAR-TIME INGENUITY. Built to WPB conservation standards, these fixtures are a tribute to the ingenuity of the lighting industry in war-time. Their light weight, their sturdiness, their fine construction would recommend them even if there were no restrictions on materials. And they point the way toward better and better lighting when the war is over.

For some time before the first WPB order, General Electric engineers had been working with fixture manufacturers to develop new non-critical materials for reflectors and new light-weight fixtures. General Electric is glad to have been able to contribute to the research that has made this progress possible.

Fluorescent fixtures bearing either of these two labels are made to rigid specifications for mechanical, electrical, and illuminating excellence; and are tested and certified by impartial experts, Electrical Testing Laboratories, Inc., of New York. You can depend on fixtures bearing these labels.

THE BEST INVESTMENT IN THE WORLD IS IN

GENERAL ELECTRIC

# of Certified Fixtures
WARTIME PRODUCTION NEEDS

AND EFFICIENCY FOR THE FUTURE

These fixtures comply with WPB requirements and are made by manufacturers of E.T.L. Certified equipment. They are available on priorities for war plants that need them.

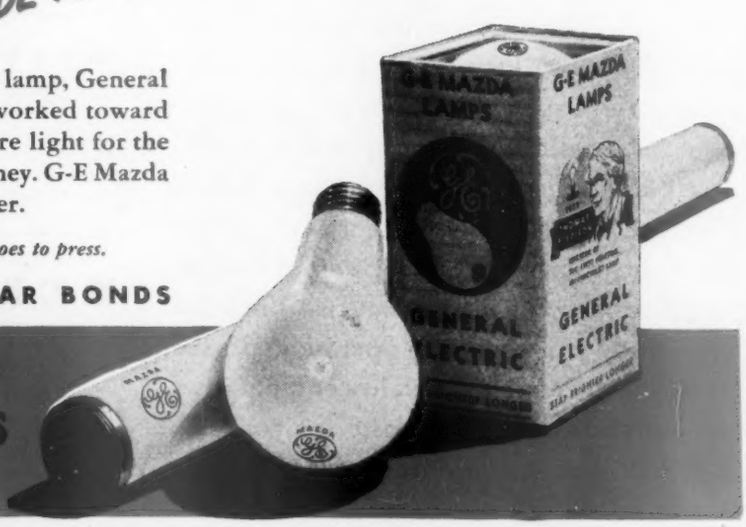
Hear the General Electric radio programs: The "Hour of Charm", Sunday, 10 p. m. EWT, NBC; "The World Today" news, every weekday, 6:45 p.m. EWT, CBS.

MADE TO STAY BRIGHTER LONGER

Starting with Edison's first successful incandescent lamp, General Electric scientists and engineers have constantly worked toward one goal . . . to make lamps that give more and more light for the current consumed and that sell for less and less money. G-E Mazda Fluorescent Lamps are made to stay brighter longer.

✶ *In process of certification when this advertisement goes to press.*

THIS COUNTRY'S FUTURE — BUY WAR BONDS



G-E MAZDA LAMPS

A BEMIS MULTIWALL PAPER BAG EXPERT may help you

SAVE TIME and man power on bagging and loading operations.

CUT LOSSES due to bag breakage in filling and shipping.

IMPROVE CLOSURES to prevent sifting.

ADD SALES APPEAL to your product through better packaging.

He's at your service without cost or obligation

You can benefit from the counsel of a Bemis Multiwall Paper Bag Expert whether you are a Bemis customer or not. So please feel free to call upon us any time you have a troublesome bagging problem. You'll find the Bemis Man an expert on all phases of such problems, from bag design to closing machinery, shipping and storing. Let him study your bagging operations to see if he can increase output, lower man power, cut costs or reduce waste for you. His call will cost you nothing and place you under no obligation.

SAVE 8 MEN IN PACKING AND LOADING OPERATION

A plant shipping products in multiwall bags required 16 men to pack and load their output. A Bemis Multiwall expert recommended rearrangement of packing equipment and slight mechanical changes. Results: 8 men doing the work previously requiring 16!

BEMIS BRO. BAG CO.

Better Bags for 85 Years

Peoria, Ill. • East Pepperell, Mass. • Mobile, Ala.
San Francisco, Calif. • Wilmington, Calif. • St. Helens, Oregon

Baltimore • Boston • Brooklyn
Buffalo • Charlotte • Chicago
Denver • Detroit • Houston
Indianapolis • Kansas City
Los Angeles • Louisville
Memphis • Minneapolis
New Orleans • New York City
Norfolk • Oklahoma City
Omaha • St. Louis • Salina • Salt Lake City • Seattle • Wichita

CONGRATULATIONS TO THE AMERICAN FARMER

Incorporated 1850

Pennsylvania Salt Manufacturing Co.
Manufacturing Chemists.
Widener Building
Philadelphia

Leonard T. Beale
President

August 28, 1943

Claude R. Wickard, Esq.,
Secretary of Agriculture,
Washington, D. C.

Dear Mr: Secretary:

May we, through you, congratulate the American farmer whose production of food is doing much to maintain the fighting spirit back of the will to win. While our opportunity to help is somewhat limited, we do get a great deal of satisfaction from the knowledge that some of our products, long known and well established in the farm field, are performing a vital service.

For instance, our chlorine bactericides are aiding in the quality milk program carried on by the principal dairy states -- as well as increasing egg and poultry production by helping to prevent the spread of disease among chickens. Another product, lye, is an important factor in maintaining the health of hogs. Our insecticide is serving effectively in protecting food crops from the ravages of insect pests.

With these we are able to help the farmer produce more meat products, eggs, milk, butter, cheese, evaporated milk, fruit and many other food supplies. And while we realize that this service is a minor role in the immense war program, we are glad to contribute in this way to help provide the armed forces and the peoples of the United Nations with food to win.

Yours for Victory,

Leonard T. Beale

PENN SALT
Chemicals

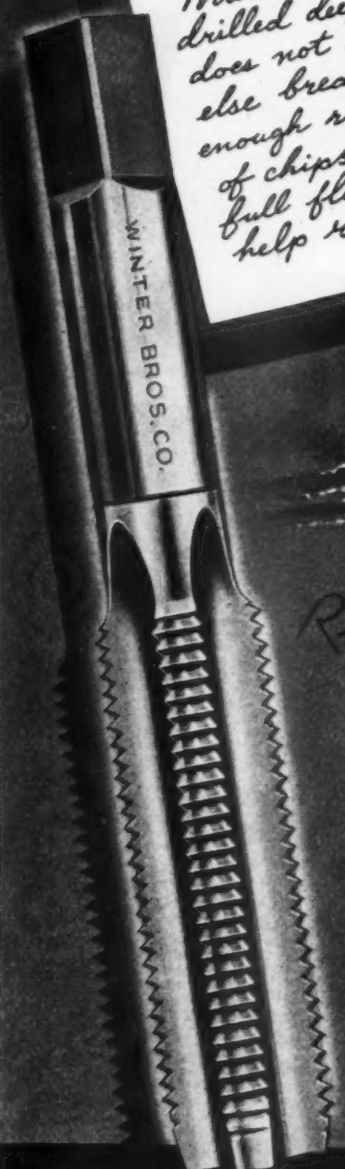
NOTES to a war-time machinist

Blind Holes

Make sure blind holes are drilled deep enough so the tap does not strike the bottom, or else breakage will result. Allow enough room for the accumulation of chips ahead of the tap. A full flow of lubrication will help remove the chips.

Size of Tapped Hole

Taps exactly the same size will cut different size holes if the rake of the cutting edges are different. In resharpening a dull tap, particular care must be given to the rake of the cutting edges to insure uniform sized holes. Grind the dull tap to conform closely to the shape of a new one



Remember —

A tap out of alignment with the hole will cause a bell-mouthed hole; and set up cramping strains very likely to break the tap.

A tap cutting slightly small, will cut from one thousandth to three thousandths of an inch larger (depending upon the size of the tap), when reground a little more hooking on the cutting edges.

Bakelike, hard rubber, and fibre wear taps down quickly. High Speed steel taps last longer, especially those treated for tapping plastics.

When threading soft materials (such as aluminum), taps should be advanced very carefully to avoid torn threads and bell-mouthed holes.

Select the tap for the job; use plenty of good lubrication; and keep the cutting edges of the tap sharp. Dull taps always cut poor threads; turn hard; and break long before they are worn out.

Winter Brothers

COMPANY Wrentham, Massachusetts, U.S.A.

STAR "POWERS" THIS MODERN SUBMARINE
for antennae mast hoist
for two periscopes—each a motor, a hoist and a brake
for bow plane tilting
for bow plane rigging, anchor windlass and bow capstan
for hydraulic steering gear
for low pressure ballast unloader
for stern plane tilting
In the tight spots it's a STAR

There are many "tight spots" on the modern submarine. In your product, there may be just one. But in that "tight spot," a Star Electric Motor will do its part—and do it well. To begin with, it will "fit" the spot. It will do so thanks to Star's unique welding process, which adapts various H.P. requirements to various shapes and sizes — and does this without special molds, without special castings. And it will "fit" the job—for the same Star engineers, who provide "packaged power" to control the periscopes and steering gears of the machines of war, also provide "packaged power"—*tailored to fit*—for the products of peace.

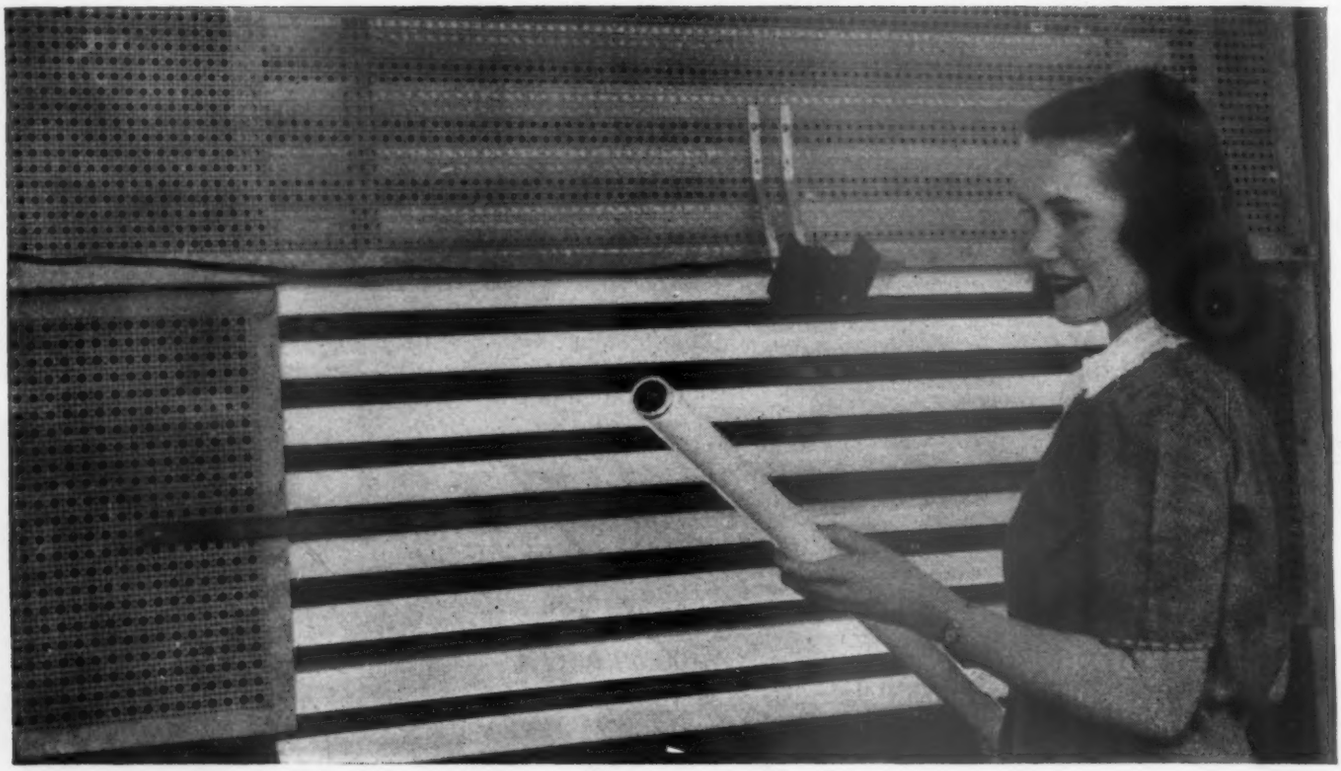
Star Electric Motor Co., Bloomfield, N. J.

FOR 33 YEARS, Star Motors have provided a complete line of standard as well as specialized motors — in sizes from ½ to 200 H.P. Today they are providing dependable power for many applications. Please write us about your requirements today.

POWER **PACKAGED** AS YOU NEED IT

ARMY E NAVY

STAR MOTORS



AGE BEFORE DUTY..

• When properly "aged" or seasoned, fluorescent lamps remain more constant than daylight throughout their entire life. This is important in lamps that illuminate precision work in war plants.

At Sylvania there is a special "age before duty" machine that lights and relights fluorescent lamps for carefully regulated time intervals. This mellowing process prepares all the elements that make up a lamp for a life of uniform light output. It is also a final precaution taken to weed out an occasional substandard lamp which may have filtered through dozens of painstaking inspections.

That is why a Sylvania Fluorescent Lamp can be counted on for consistent light output every minute of its life.

"Aging" is one of many Sylvania methods of safeguarding fluorescent quality. Lamp efficiency is perfected and maintained at its highest peak through continual research by Sylvania engineers who have years of specialized experience with incandescent lamps, radio tubes, ultra-violet lamps and other electronic devices.

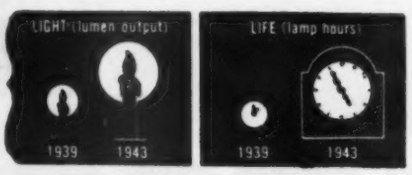
Today Sylvania's research is providing the best and most economical lighting known for war industry. When victory is won, the same independent research will bring the advantages of fluorescent lighting to postwar homes.

For more light output, longer life and uniform color, specify Sylvania Fluorescent Lamps in new installations and replacements.

FAR MORE LIGHT AND LIFE FOR YOUR MONEY

Compared with 1939, a dollar invested today in Sylvania Fluorescent Lamps buys more than four times the lumen output and approximately five times the lamp life.

SYLVANIA FLUORESCENT DOLLAR BUYS:



(Based on decreasing price and increasing efficiency and durability of Sylvania 40-Watt White Fluorescent Lamp)

Even on existing circuits, a change-over to fluorescent—Sylvania Lamps, Fixtures and Accessories—will probably more than double the light you get for the same wattage.

SYLVANIA

ELECTRIC PRODUCTS INC.

Formerly Hygrade Sylvania Corporation

Salem, Mass.

INCANDESCENT LAMPS, FLUORESCENT LAMPS, FIXTURES AND ACCESSORIES, RADIO TUBES, CATHODE RAY TUBES, ELECTRONIC DEVICES

How U.S.* untied a knot in a steel mill turbine

IF THERE'S a tougher type of turbine to lubricate than a turbo blower in a steel mill, we haven't heard about it. No wonder one of the country's large steel producers couldn't get turbine oil to last longer than 6 months!

But in November, 1940, this manufacturer filled one of its turbo blowers with the then new Shell Turbo Oil. The phenomenal result is shown at right. After 18,553 hrs. of operation Shell Turbo Oil still shows no signs of deterioration. This performance is the reason Shell Turbo Oil is now used in 14 turbines of this steel company.

For further details on this and other outstanding performances of Shell Turbo Oil call in the Shell man. Or, write Shell Oil Company, Inc., Dept. "C," 50 W. 50th St., New York, N. Y., or 100 Bush St., San Francisco, Cal.

SHELL TURBO OIL

Currently, the U. S. Navy has first call on Shell's entire production of marine turbine oil.

* CERTIFIED PROOF OF THE SUPERIOR

OXIDATION STABILITY

OF SHELL TURBO OIL

156	CHARACTERISTICS	156
Clear	Appearance	Clear
.05	Neutralization No.	.05
.1	Saponification No.	.1
90	Steam Emulsion No.	90

Performance record of Shell Turbo Oil in one of the fourteen units of a large steel producer.

SHELL

"YOU KNOW VALVES, BUDDY!"

A CERTAIN percentage of the thousands of untrained war workers come up fast. Some of them will make foremen, managers, owners because they are serious and studious.

For example—when such young men tackle a valve application or replacement, they refuse to operate "by guess and by gosh." They select the right valve and prevent future trouble by studying the job through in advance.

As a further precaution they refer to suggestions prepared by the National Safety Council. Thus, the man in the picture, while screwing a length of pipe into a valve, holds the valve with a second wrench to guard it against twisting when the joint is tightened.

These men soon discover that Reading-Pratt & Cady valves combine built-in safety with dependable performance and long life. These good qualities unite to reduce valve accidents, replacements and delays.

Reading-Pratt & Cady Valves are among the many products we build for Industry, Transportation and Agriculture, essential in peace, vital in war.

National Safety Council Offers These Suggestions on Valve Safety

1. Install valves which are equal to the job in design, materials, and construction.
2. Operate valves slowly or use by-pass. Valves should be locked if there is any possibility of unauthorized manipulation which would lead to accidents. Be sure to lock valves leading to boilers in which men are at work and valves on lines where repairs are being made. Place warning signs near such valves.
3. Don't remove valve wheels from valves—particularly those at danger points calling for emergency operation.
4. Don't turn a valve stem with a wrench. This may make it impossible to operate the valve either by wrench or wheel.
5. Inspect frequently valves subjected to unusual strain from excessive pressures and temperatures and valves weakened by corrosive gases and liquids.

•

The American Chain & Cable Company is happy to cooperate with the National Safety Council in its nation-wide campaign to "Save Manpower for Warpower"—which is now being conducted at the request of President Roosevelt.

In Business for Your Safety

AMERICAN CHAIN & CABLE COMPANY, Inc.

BRIDGEPORT, CONNECTICUT In Canada—Dominion Chain Company, Ltd. • In England—The Parsons Chain Company, Ltd., and British Wire Products, Ltd.

Aircraft Controls, American Chain, American Cable Wire Rope, Campbell Cutting Machines, Ford Chain Blocks, Hazard Wire Rope, Manley Garage Equipment, Owen Springs, Page Fence and Welding Wire, Reading Castings, Reading-Pratt & Cody Valves, Wright Hoists and Cranes

ONE MAN DOES MORE THAN 3 OR 4

Think of the man-power savings that will mean in your plant!

Because they move materials as a unit rather than as separate items or containers, Barrett Lift-trucks enable *one* man to do more than three or four with *ordinary* equipment—eliminate all unnecessary handling and *re*handling. With a Barrett, you stack it *once* . . . and it's done.

Surely such labor-saving equipment can be of help to you in these critical times.

Why not investigate? Get in touch with a Barrett Engineer *now*—when he can do you and your war effort the most good.

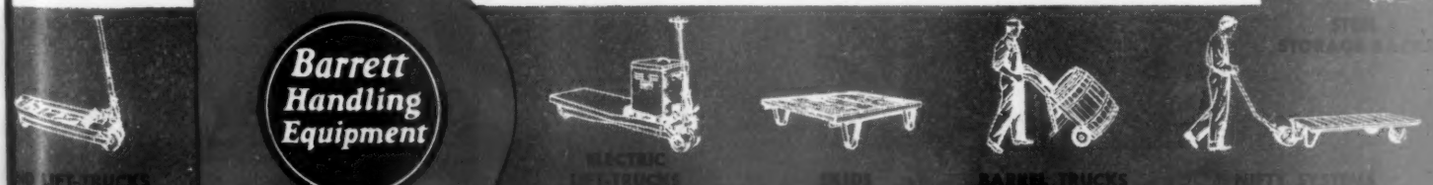
BARRETT-CRAVENS COMPANY
3280 West 30th Street • Chicago, Illinois

Write today for free copy of the Barrett Junior Catalog.

BARRETT

ONE MAN DOES MORE THAN 3 OR 4 . . . WITH A BARRETT LIFT-TRUCK

Barrett Handling Equipment



THESE SLINGS PASS WARTIME INSPECTION

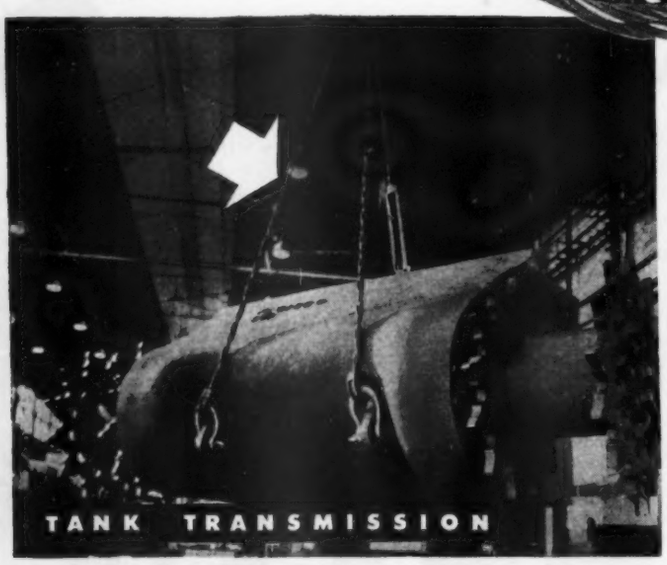
FOR SAFETY...SPEED...ECONOMY OF MANPOWER AND MATERIALS

When virtually every load is tagged for war production, efficient handling becomes an obligation—one you'll discharge on all counts with Yellow Strand Braided Wire Rope Slings.* *Safety?* The strength of this patented sling lies in tough Yellow Strand Wire Rope, so braided that it gains marked flexibility . . . conforms readily to any product . . . grips it gently but securely. *Speed?* Light weight and high kink-resistance make the sling easy to carry, attach and remove. *Economy?* A compact braided sling conserves manpower and materials, compared with bulky types. Even when lifting heavy locomotives, turbines, pressure towers or weapons, a Yellow Strand Braided Sling will require fewer men —and less steel. And for such lighter lifts as jigs, tools, drums or crates, a Yellow Strand Sling offers relief from the fiber shortage. Fitting material-handling equipment to your specific job is the function of Broderick & Bascom's specialized Sling Engineers. Investigate today!

Broderick & Bascom Rope Co., St. Louis

Branches: New York, Chicago, Houston, Portland, Seattle
Factories: St. Louis, Seattle, Peoria

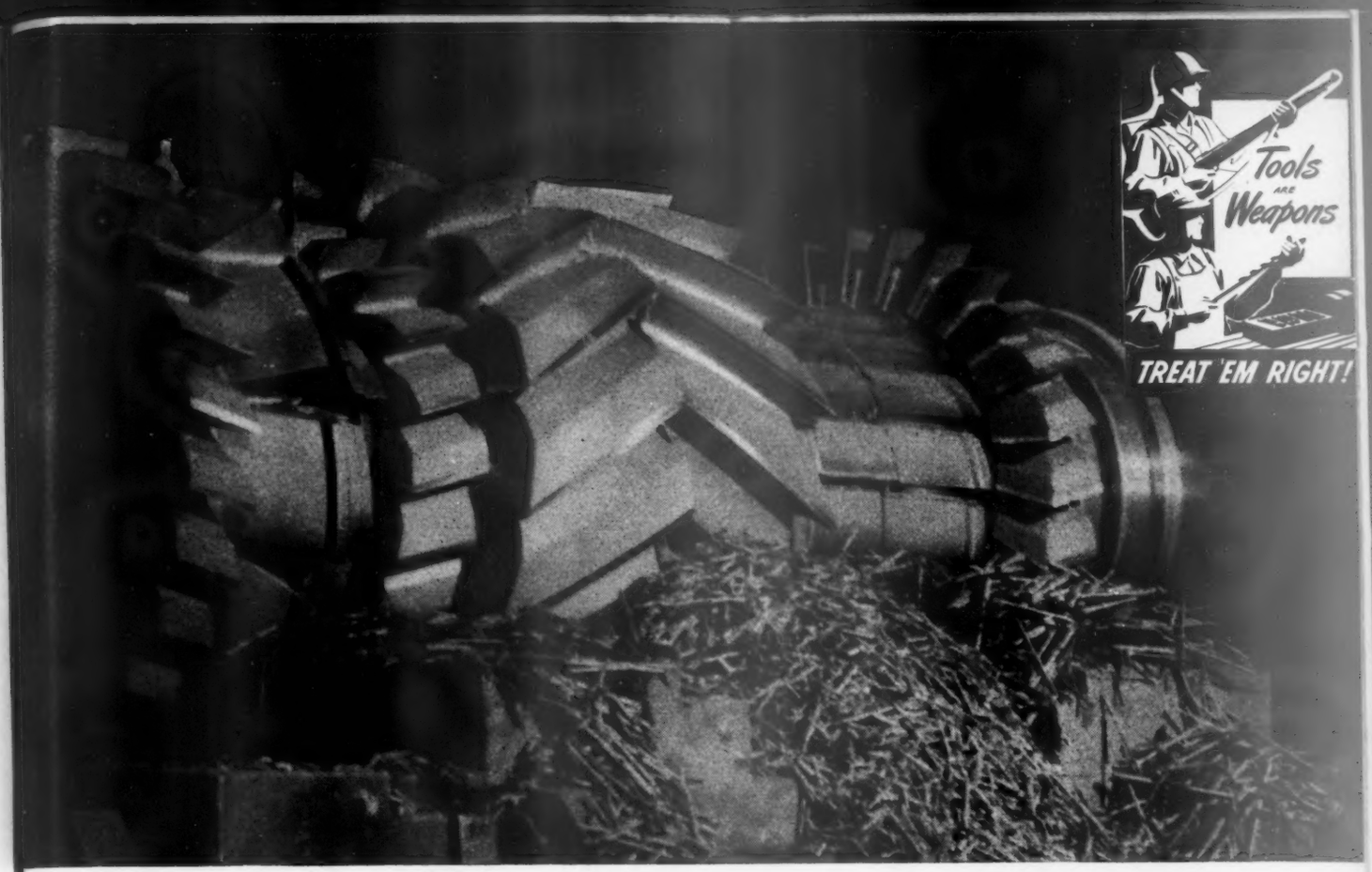
FREE
Riggers' Hand Book
96-pages of practical wire rope sling information. Send for free copy.



3-TIME WINNER
ARMY E NAVY
BRODERICK & BASCOM

*Patents: U. S., 1475859, 1524671, 2142641, 2142642 • Canadian, 252874, 258068

YELLOW STRAND
Braided Wire Rope SAFETY SLINGS



Cutters Give You More Production When You Give Them More Care

Follow These Simple Suggestions · They Will Help You Increase Your Production

HANDLE CUTTERS carefully to prevent damage to the cutting edges.

HAVE THE WORK CLAMPED AND SUPPORTED PROPERLY. Work not held rigidly can cause premature cutter wear or even breakage.

MOUNT CUTTERS as closely as practicable to the spindle.

USE ARBORS OF SUFFICIENT DIAMETERS. Insert arbor shanks carefully in thoroughly cleaned taper holes. Ends of collars should not be bruised. Provide adequate arbor support.

RUN SMALL CUTTERS (such as end mills) at the same surface speed as that used for larger cutters.

KEEP CUTTERS SHARP. When cutters are used after they have become dull excessive metal is lost in sharpening. On a production job, sharpen cutters after a predetermined number of cuts regardless of wear.

IN SHARPENING, control cutter clearance carefully and remember softer metals may require several times the clearance of cutters for iron and steel.

COUNTERACT CHATTER. Incorrect clearance and lack of rigidity of machine or cutter drive contribute to chatter which can cause abnormal cutter wear.

BE SURE MACHINE IS HEAVY ENOUGH to stand the cut and use the correct spindle speeds with each setup. Supply ample coolant where it is required.

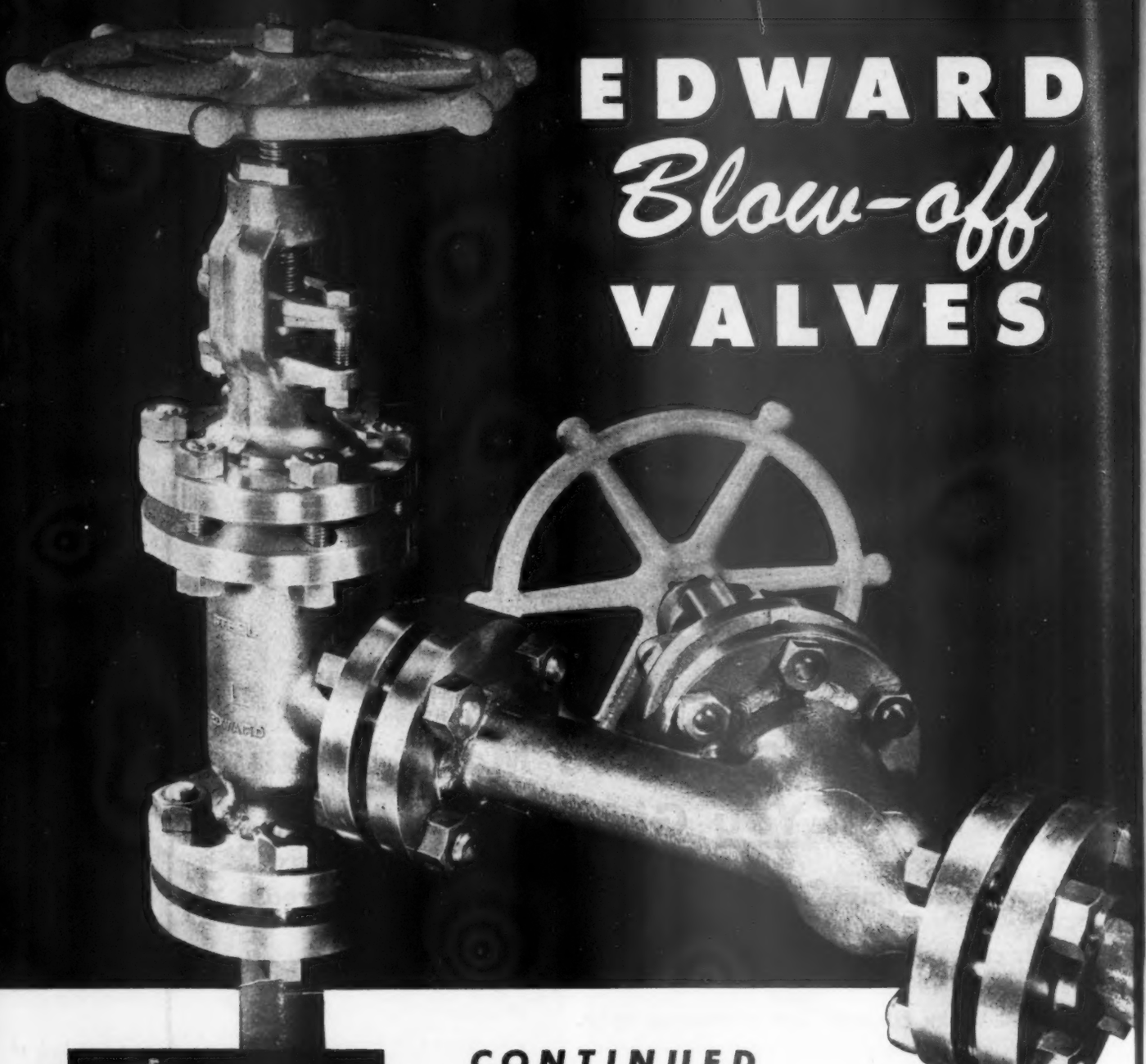
Give cutters extra care these days when the supply available is limited so that the production requirements for our armed forces can be maintained.

We are proud to be honored with the Navy "E", awarded for outstanding accomplishment in Defense production.
Brown & Sharpe Mfg. Co.
Providence, R. I., U.S.A.
BS

Reproductions of this advertisement for use on your bulletin board furnished on request.

BROWN & SHARPE CUTTERS

EDWARD *Blow-off* VALVES



Built with both socket welding ends (above) or flanged ends (below) Edward blow-off valves have a minimum of internal parts. Hence less clogging, erosion, adjustment or replacement.

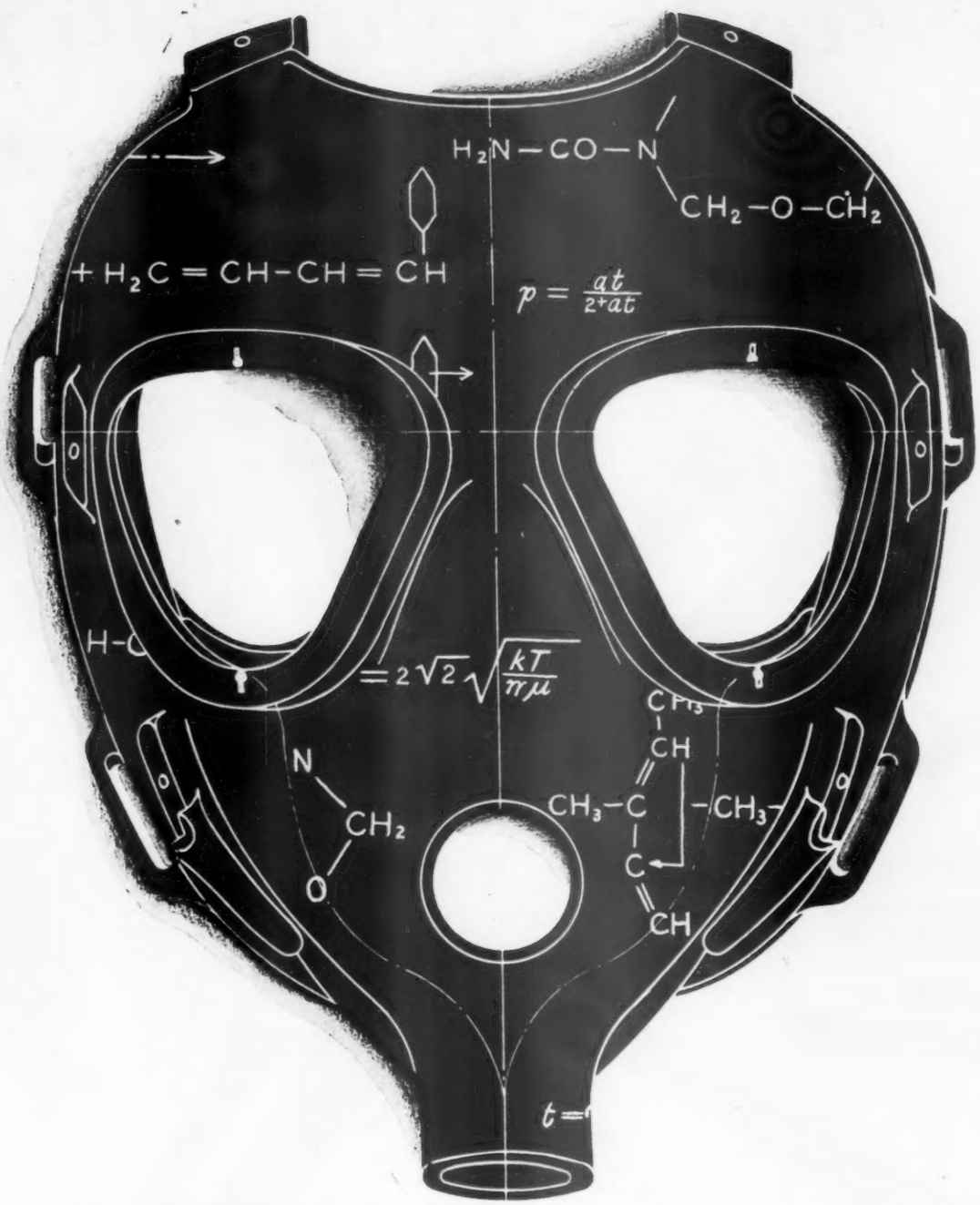
CONTINUED TIGHT CLOSURE

Nothing is more important in a blow-off valve than tight closure over long periods of operation.

That's why Edward blow-off valves are of globe type seating design. That's why, too, the materials used in their manufacture have been carefully selected so that the coefficients of expansion are such that a valve closed tight under high boiler temperature will still be tight when cool.

For any power plant, marine, oil field boiler or process piping service from 150 to 1500 lb sp service, specify Edward. The choice of straightway or angle design makes possible a wide variety of installation combinations to meet space limitations. The Edward Valve & Mfg. Co., Inc., 1220 West 144th Street, East Chicago, Indiana.

EDWARD *Steel* VALVES



Formulae are front line fighters today . . . *every day.* Week in and week out, sun-up to sun-up, we are busy transforming blueprints of American ingenuity into rubber and synthetic rubber articles of war.

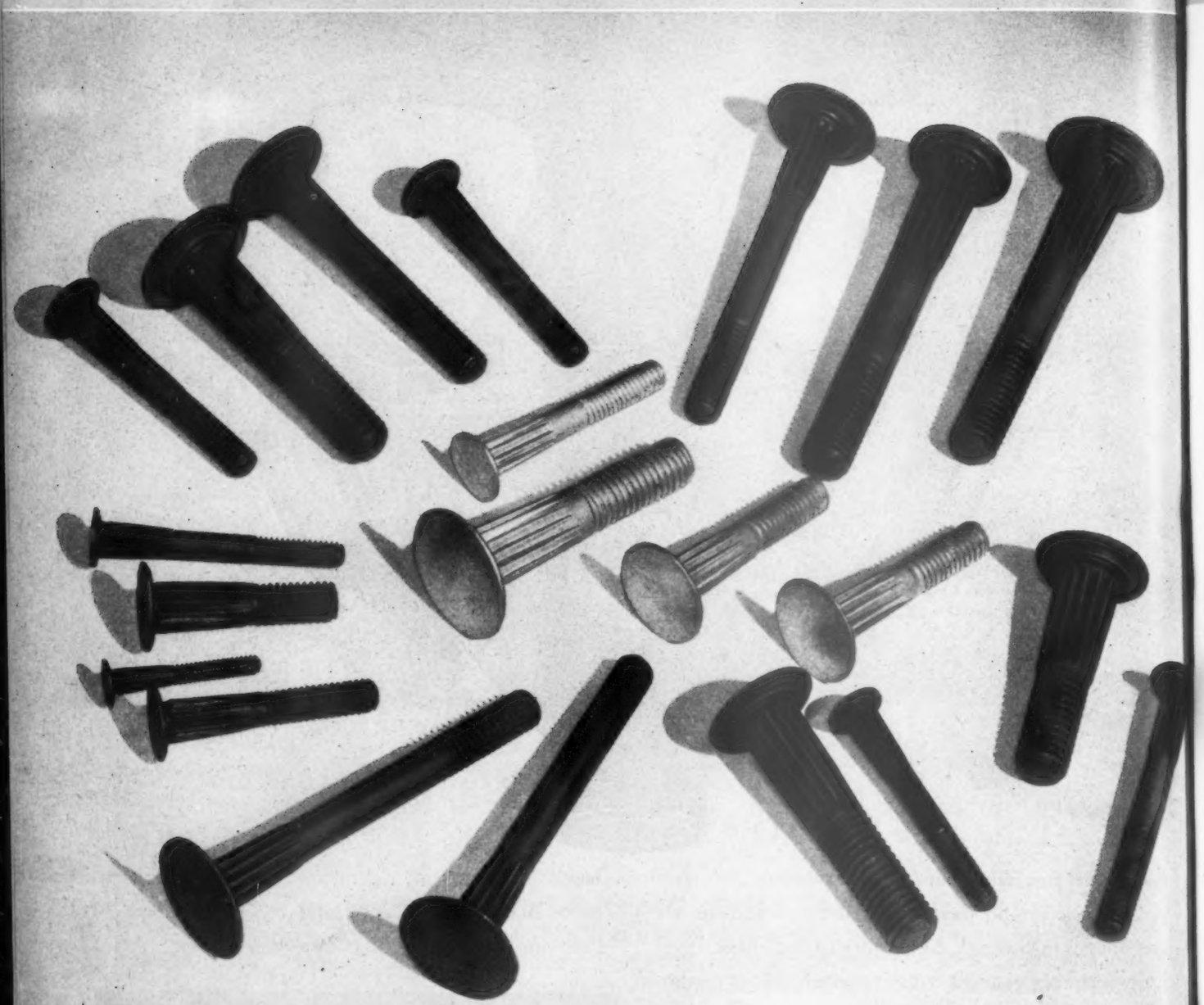
That's a gas mask up there — in embryo. Because it and thousands like it *must* go to our fighting services, we cannot fill the orders of many good friends in the trade.

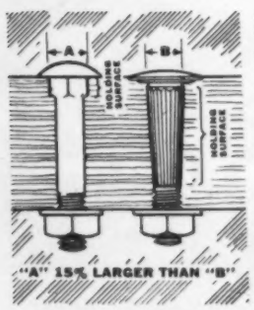
We ask you to be patient with us — and with all war goods manufacturers with whom you are doing business — or trying to. . . . Uncle Sam has to be Customer Number One until the Japs and the Nazis yell quits. . . . Acushnet Process Company, New Bedford, Massachusetts . . . Processors of Precision-Molded Rubber Goods.

In rubber, remember the name —
ARMY E NAVY
ACUSHNET

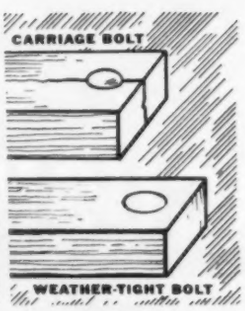
Weather-tight Bolts for w*

AND MAKE A TIGHT A





Weather-tight bolts cannot turn in bored hole when nut is applied.



Tapered splined shank prevents splitting board near end

Weather-tight bolts offer no projections to catch shovels

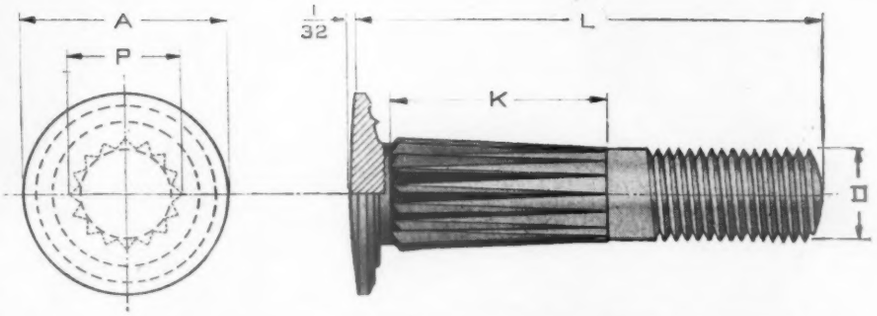
Weather-tight bolts prevent floors "bumpy" with bolts

Abrasion does not sharpen edges of *Weather-tight* bolt heads

r wood need no counterboring

IT ASSEMBLY MUCH FASTER

● When you change from steel to wood construction—you will need a bolt that will make a weather-resisting, sturdy assembly. You will need a bolt that can be applied fast, that will pull up tight, and that will need no counterboring. Lamson *Weather-tight* bolts meet these requirements!



Lamson *Weather-tight* bolts have a splined shank 15% smaller than the cross-corner dimension of a square-shanked carriage bolt. This factor means that the *Weather-tight* bolt can be used nearer the end of a board than an ordinary carriage bolt without danger of splitting the board.

Weather-tight bolts have a *tapered, splined shank* that fits the bored hole *like a cork in a bottle,* and the splines *prevent the bolt turning* when the nut is applied. Gripping power is greater due to the *greater area* of the bolt in contact with the wood.

A carriage bolt head must set on top of the wood surface, the square shoulder of the shank crushing wood fibers, or must be countersunk. A Lamson *Weather-tight* bolt needs no counterboring, and the head *sets flush* with the wood surface. That feature alone saves time in application. It also insures that *Weather-tight* bolts offer no protruding projections. Besides that, Lamson *Weather-tight* bolts have *two concentric, annular ribs beneath the head,* which compress wood fibers *below the bead.* These two ribs seal the *head end* of the bolt against admitting moisture —and the *tapered splined shank* seals the opposite end of the bolt against moisture, making a complete, *weather-tight* assembly!

Lamson *Weather-tight* bolts are made in standard sizes, from 3/16" diameter up to 3/4" diameter, any length. Large and small heads are available, on your specification. From bridge trusses to skid platforms, Lamson *Weather-tight* bolts are being specified in ever-increasing quantities. Their amazing efficiency is easily demonstrated by any test you care to make. Ask for samples in the sizes you need, and price list.

THE LAMSON & SESSIONS COMPANY
General Offices: 1971 West 85th Street, Cleveland, Ohio

*U. S. Patent No. 1830554

D—BOLT SHANK DIAM.	10/24	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"
A—HEAD DIAMETER	7/16"	9/16"	11/16"	13/16"	1 1/16"	1 5/16"	1 9/16"
K—MIN. STANDARD Length of Ribbed Section	31/64"	3/4"	3/4"	7/8"	1 1/8"	1 1/8"	1 1/8"
K—SHORTER THAN STD. Length of Ribbed Section	1/4"	3/8"	3/8"	7/16"	9/16"	9/16"	9/16"

These four books will help you in specifying and buying "standard" bolts, nuts and "specials"

THE LAMSON BLUE BOOK—is our complete Catalog of standard products excepting our Aircraft products.

"BOLTS, NUTS & SCREWS"—70 pages of technical and practical information. First copy gratis, requested on your letterhead. Additional copies one dollar each.

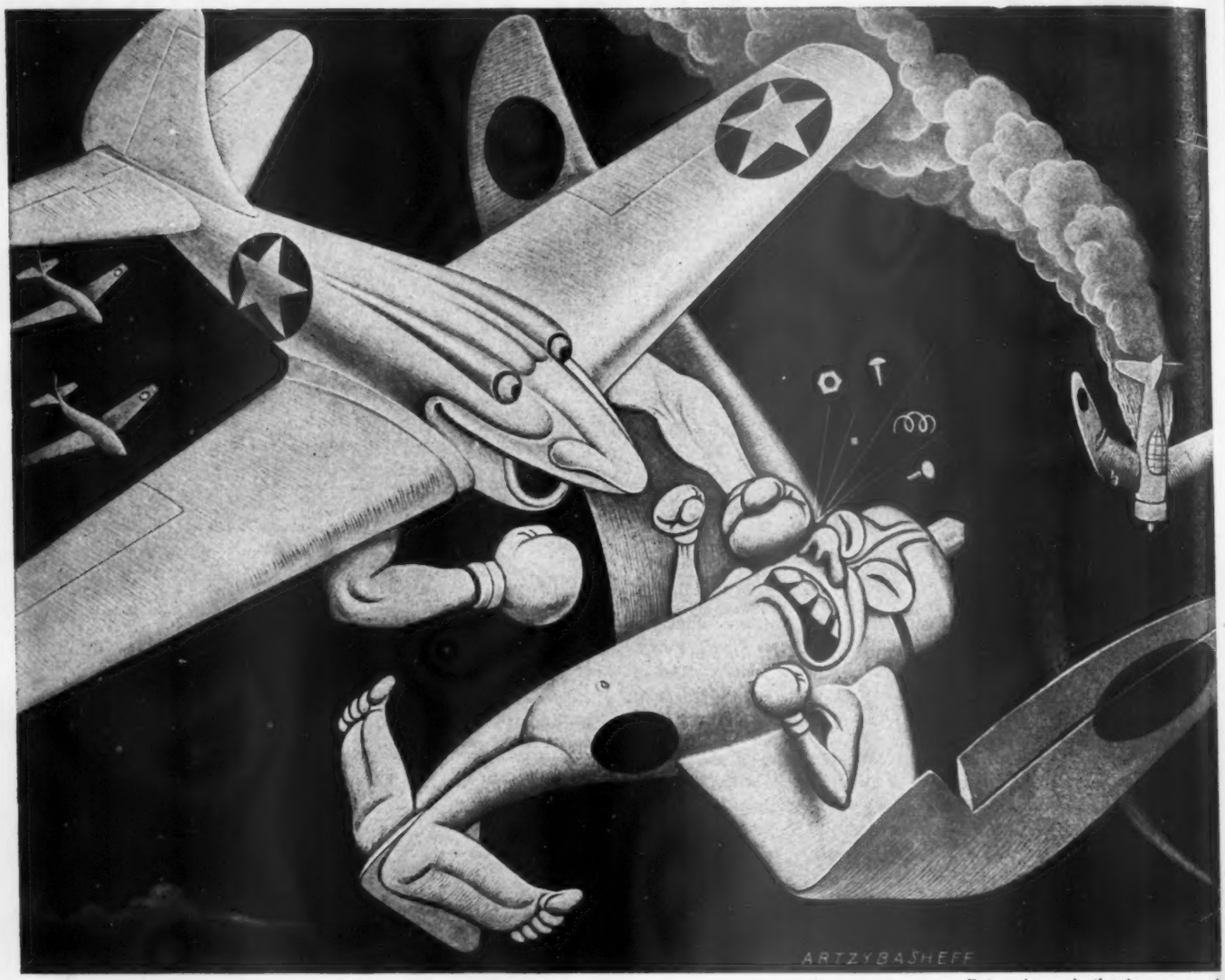
"BOLT, NUT & RIVET STANDARDS"—175-page book published by the American Bolt, Nut & Rivet Manufacturers Association, 1550 Hanna Bldg., Cleveland, Ohio. Price one dollar per copy. (Order from publishers please.)

"SIMPLIFIED STOCK LIST"—Of bolts, nuts and screws, conforming to latest revisions of the Office of Price Administration, and of great value in showing you in what ratio quantities of various standard products are kept in stock for deliveries, by your jobbers and in our own (and other bolt manufacturers') warehouse stocks.

LAMSON & SESSIONS

BOLTS · · NUTS · · COTTERS · · CAP SCREWS · · SPECIALS

Your Jobber Stocks the Lamson Line



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Wire Cloth Wallop

One reason U. S. A. pilots can get speed that puts them on top to deal knockout blows is America's fast-growing production of 100+ octane gasoline.

An ingenious development for the close fractionation of this higher octane gasoline is Stedman packing. Close fractionation is now also practical for large scale production of synthetic rubber, toluene and a wide variety of other products . . . some of them hitherto impossible to distil commercially.

Heart of each Stedman column is thousands of pieces of strong Wickwire Spencer wire cloth . . . just one of the almost endless variety of wire materials for which this 122-year old company has won world reputation. When *your* war production calls for wire or wire products, put *your* needs up to experts.

• • •

War Bonds are an investment that reflects your confidence in Victory and America's future.

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WICKWIRE SPENCER STEEL COMPANY

500 FIFTH AVENUE **NEW YORK (18), N. Y.**

FAMOUS FOR QUALITY IN WIRE, WIRE ROPE, SPRINGS, METAL CONVEYOR BELTS, INDUSTRIAL WIRE CLOTH, POULTRY NETTING, HARDWARE CLOTH, INSECT SCREEN CLOTH, ELECTRICALLY WELDED FABRIC FOR CONCRETE

STANDS FOR FRIENDLINESS

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NOW, a single book—indexed for easy reference—can take the place of separate handbooks and bulletins for identifying and ordering most G-E renewal parts needed to keep your equipment in operation. With this book, you'll find it easier to order genuine G-E parts *by catalog number*—saving time all along the line.

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Four are FILING—The Fifth is FIGHTING

IN spite of the manpower shortage—production holds up! *Four Delta Files are doing the work of five!*

Actual scientific tests have proved that Delta Files will do on the average 25% more work—in the same amount of time, with the same effort!

The Delta File was made to do your job better. And quicker. It digs deep. Cuts away the metal fast. And clean. Levels without scratching or skidding.

Manpower is scarce. Production demands are heavy. Get *full capacity* out of every tool. Give your workmen the "Go" signal. Take the check reins off, so they can work to win! Today—more than ever—you need this fighting file.

DELTA FILES

DELTA

DELTA FILE WORKS, Inc.
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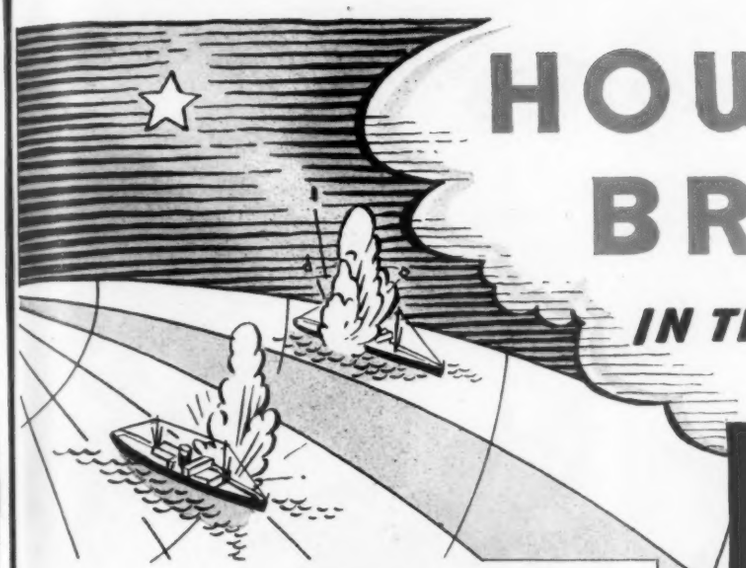
Prove it yourself

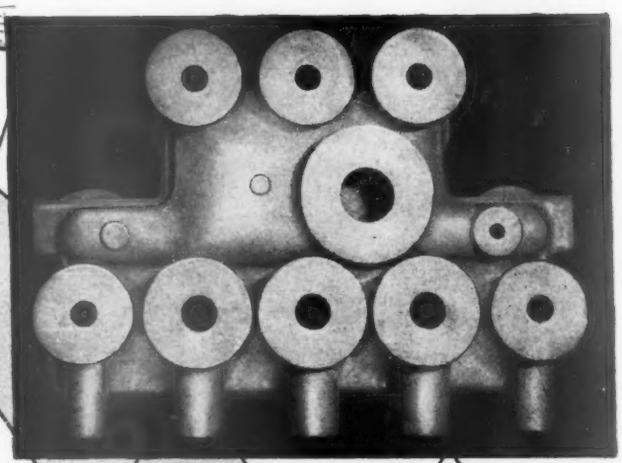
Clamp a bar—say one-inch square—upright in a vise. Cut a hole in a sheet of paper then fit the paper over the bar. Take 100 strokes with a Delta—each side—and collect the filings. Now, do the same with your present files. Weigh the filings. Notice the difference and you'll understand why I recommend Delta as the file that will do faster, better work in the same amount of time.

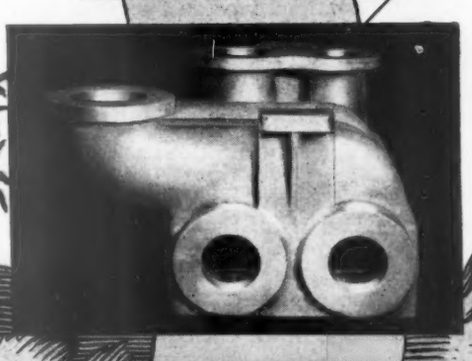
YOUR DELTA FILE DISTRIBUTOR

HOWARD BRONZE

IN THE UNSUNG SERVICE







For sound reasons, little publicity is being given the excellent job being done by American submarines. But in many seas, from the Arctic to the South Pacific, they are steadily depleting the enemy's shipping. In submarines, as in planes and tanks, the land where they were invented is turning out the best.

Many parts of American submarines which must faithfully withstand high pressures and resist corrosion are castings of the most enduring bronze, such as are being turned out in tremendous volume by the bronze division of Howard Foundry Company for submarines, surface craft and other armament parts.

Long before the war, Howard bronze and brass castings enjoyed an enviable name. They will come out of the war with a still more valued reputation.

At the two other Howard foundries an ever-increasing tonnage of magnesium and aluminum castings is being produced — all for war machines to level America's enemies. Combined, these three foundries provide the largest jobbing production of nonferrous castings in America.

When you need nonferrous castings, call on Howard. ***For armament today—for utility tomorrow.***

Howard Foundry Company
4900 Bloomingdale Road, Chicago

ARMY E NAVY

HOWARD

ALUMINUM · BRASS · BRONZE · MAGNESIUM

CASTINGS

The sun never sets on the fighting jeep . . .

COURTESY WILLYS-OVERLAND MOTORS INC.

nor on **N-A-X** high tensile steel

DUCTILITY — ITS INHERENTLY FINER GRAIN MAKES ALL THE DIFFERENCE — STRENGTH

Battle-proved on a score of fighting fronts, the Willys-built Jeep has earned a world-wide reputation for ruggedness, for built-in stamina, and for ability to take punishment under all sorts of conditions as to both temperature and terrain.

N-A-X HIGH TENSILE Steel is used in the construction of the Willys-built Jeep, and the unusual qualities of this steel find expression in the field performance of this most versatile of all combat vehicles.

N-A-X HIGH TENSILE is used in countless other types of fighting equipment, too, wherever strength, ruggedness, and high resistance to impact and fatigue are required. And on every battle front, in every theater of war, N-A-X HIGH TENSILE is daily demonstrating its excellent qualities.

Write today for your copy of a new booklet describing fully the properties and characteristics of N-A-X HIGH TENSILE and the N-A-X 9100 Series Alloy Steel.

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The World's Largest Makers of Dial Indicators

FEDERAL

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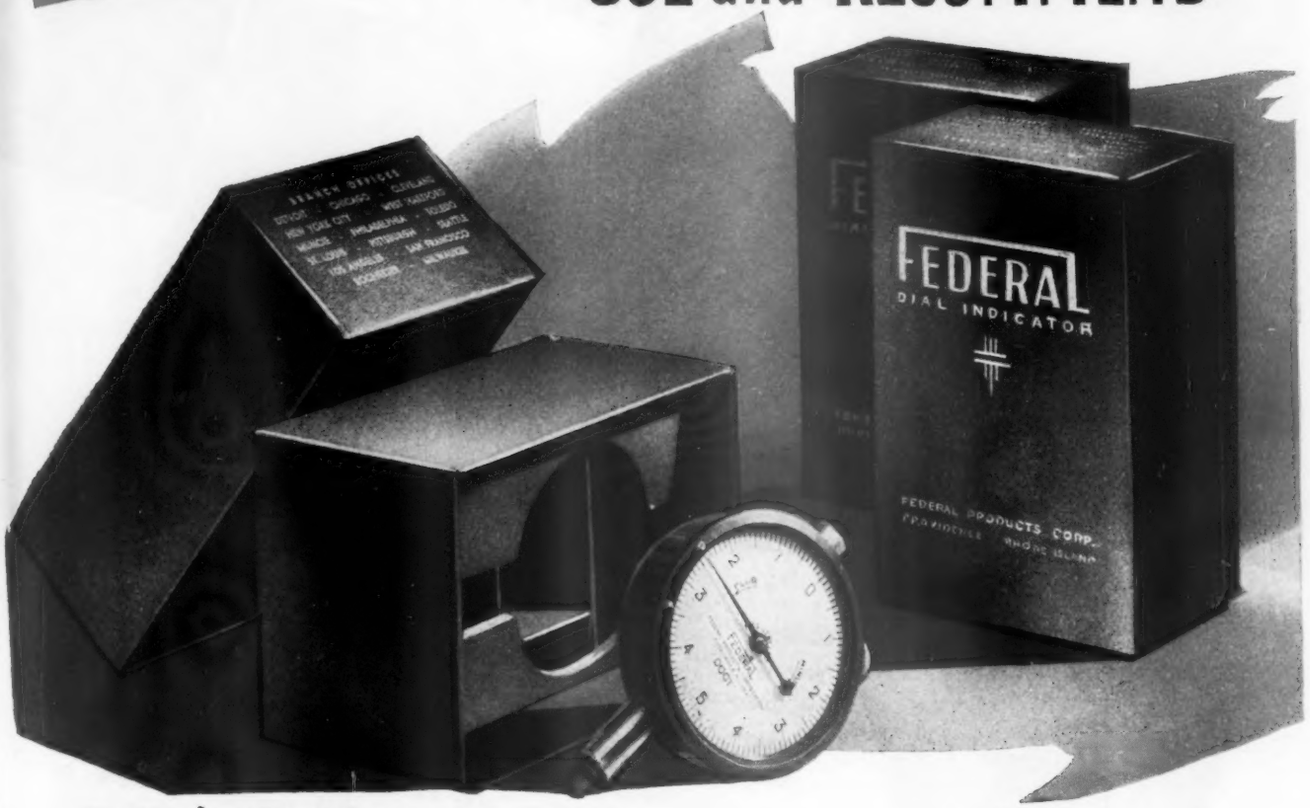
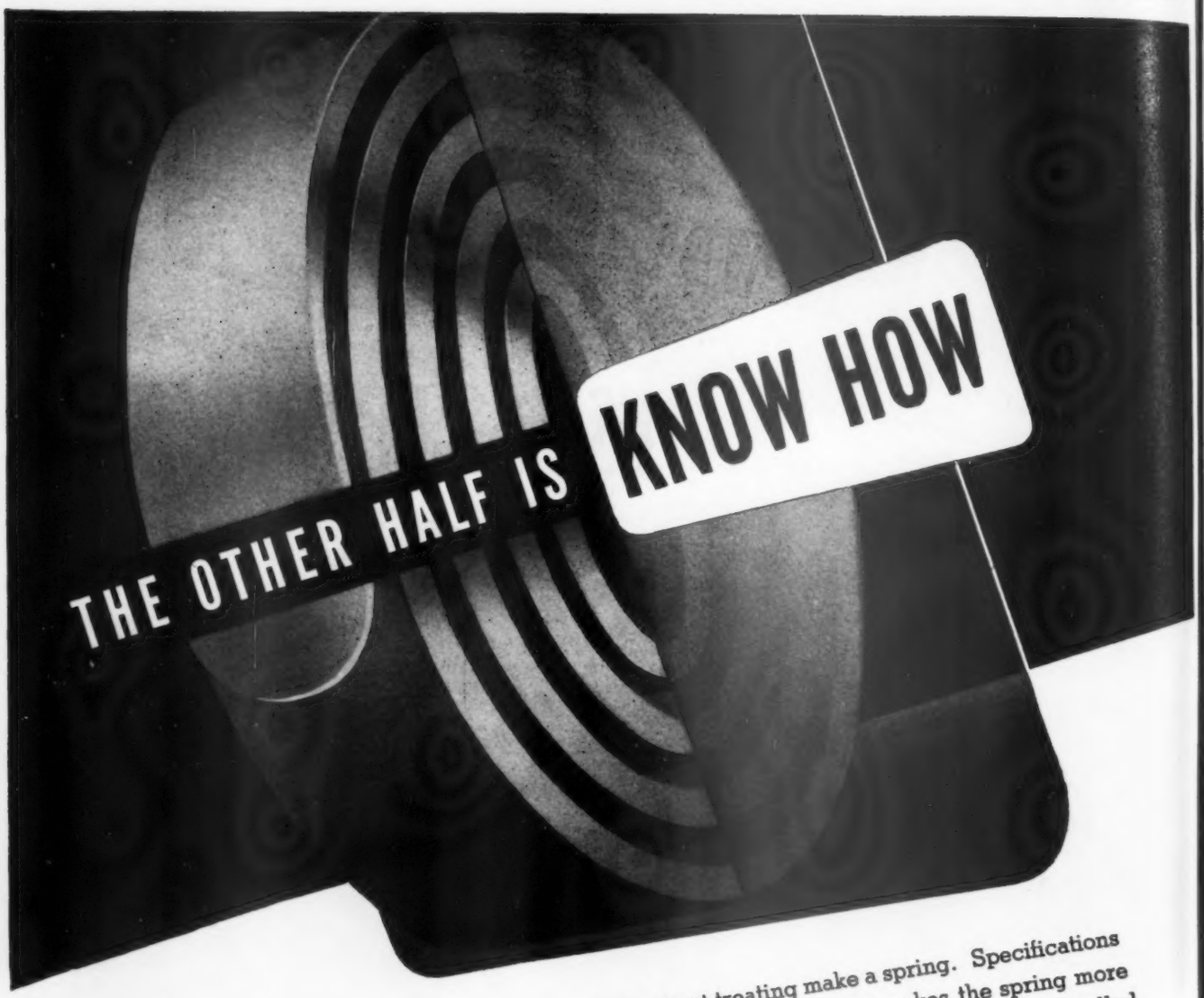
USE and RECOMMEND



MASON "Custom-bilts"

Federal needed an exceptionally strong box to package their extremely sensitive and accurate — and war vital — Dial Indicators. They wanted a box similar to the famous MASON MAILMASTERS for safety and convenience but wanted internal support for the Indicator and the elimination of padding to avoid dust. Mason's packaging experts were called in and a special box evolved which took care of the irregularities of the Indicator shape and at the same time protected it.

The MASON BOX COMPANY
ATTLEBORO FALLS, MASS. - 175 5th AVE., NEW YORK



Metal plus work plus heat-treating make a spring. Specifications say so. But there's something else that makes the spring more than acceptable. It's the careful inspection of materials, the skilled design of tools and dies, the right kind of heat-treatment. You don't learn to make springs from a recipe. That may give you the ingredients—but only a desire to make the best springs can produce the kind that "stay sweet" longer. Gibson spring engineers have that desire, our skilled workmen "know how."

IT'S NEW! IT'S LIGHTER! IT'S FASTER!

Greenfield's #1618

Rapid inspection limit snap gage

SEE HOW THE LONG ANVIL SIMPLIFIES YOUR WORK

1 It is especially adapted for gaging lengths of recessed or drawn parts. Equally suited to gaging diameters of round parts.

2 It enables the operator to quickly locate and level the work before moving it towards the "Go" and "Not Go" anvils.

3 Aligning the work with the measuring points permits more rapid handling and faster output.

4 It tends to eliminate the uneven wear of the lower anvil often shown on the conventional style gage caused by uneven approach of the work to the gage.

5 On work in the machine, it facilitates rapid checking of diameters.

"Greenfield" is happy to present this newer, faster gage at just the time when speed with accuracy is so greatly needed. This No. 1618 gage is considerably lighter than the conventional snap gage of the same capacity, yet its design assures strength and rigidity.

Write today for descriptive pamphlet, giving full specifications.

GREENFIELD TAP AND DIE CORPORATION
GREENFIELD, MASSACHUSETTS
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TAPS · · · · DIES · · · · GAGES · · · · TWIST DRILLS · · · · SCREW PLATES

POSTWAR PLANNING
on circular, rolled and welded steel products

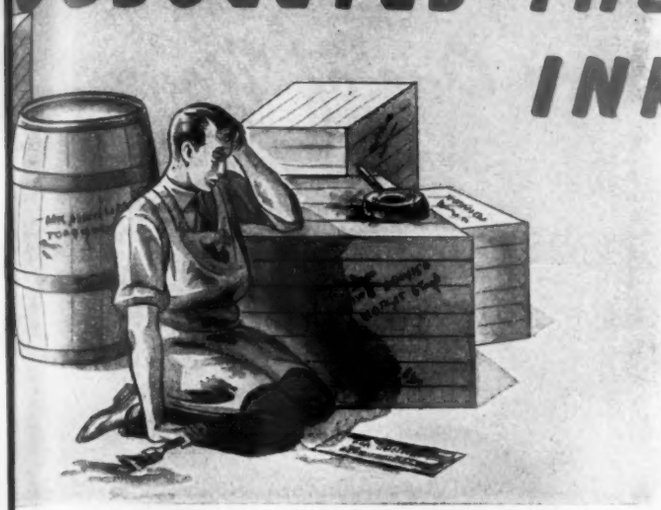
Will Make for Smooth POSTWAR PRODUCTION

All industry is planning for postwar production. Far-sighted manufacturers want to be prepared for that day when the "all clear" signal for production is sounded. After the war there will be a rush to get under way on postwar work. He, who has his plans well laid, knows his sources of supplies and has made arrangements to procure them, will be ready for smooth postwar production.

All of this applies to circular, rolled and welded steel products. If your plans are to include these items, whether they be rings, bands or hoops, and regardless of their description, right now is the time to make your arrangements for their production. After the war we will again be making these products, using our specially developed methods of fabricating on new, improved machines, designed for large scale production. We suggest that you contact us immediately.

the Cleveland
WELDING COMPANY
WEST 117th STREET at BEREA ROAD • CLEVELAND, OHIO

OBSOLETES THE SHIPPING ROOM INK POT



utmoded marking equipment in your shipping oom means extra hours of time, disgruntled ipping clerks and smeared, unattractively arked shipments. Blurred, illegible address- g is a common cause for delayed and unde- vered shipments. Time savings and customer tisfaction alone, far over- adow the nominal cost of odern stencil marking quipment.

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MARSH FOUNTAIN BRUSH *with* AUTOMATIC INKING . . .

Marks stencil addresses neatly. The exclusive, patented, button-control ink-feed allows just the necessary amount of ink to flow into the brush tip. No ink is wasted . . . no flood of ink can run on the underside of the stencil to cause blurred, filled-in letters which make words illegible. This modern method of marking stencils saves enough time and ink in 3 days to pay for itself. Send in your order now or write for full particulars. No obligation.

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MARSH STENCIL MACHINE CO. 57 MARSH BLDG. BELLEVILLE, ILL.

Is Reconditioning Tools One of Your Problems?

The carbide tipped tools for example

—where your grinding wheel and your grinding technique both are highly important.

There is a Norton booklet that covers the subject entitled "Grinding Carbide Tipped Tools."

It specifies which type of Norton Diamond Wheels should be used for each kind of grinding.

It has a chapter on the uses of Norton Metal Bonded Diamond Wheels; another on Norton Resinoid Bonded Diamond Wheels, and a third chapter tells you where Crystolon (silicon carbide) grinding wheels should have a part in reconditioning carbide tipped tools.

The book is sent free

Norton Company · Worcester 6, Mass.

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It's no good if he doesn't know how to use it!

It's an odds-on bet . . . sometime soon one of your men will face a fire, armed with one of your extinguishers.

Will he know what to do? Will this man in your plant know what kinds of fire this extinguisher should be used against? Does he know how to make it work?

There is one sure way to control blazes in your plant—fast and sure-handedly. Teach key men how to handle fire . . . how to handle fire-fighters. *Stage demonstrations. Show these men how extinguishers behave under fire.* We can help you do it.

A new Kidde handbook—"How to Teach Fire-Fighting"—tells how to stage a fast-moving, interesting, instructive demonstration of extinguishing methods. Send for your copy. Walter Kidde & Company, Inc., 1046 Main St., Belleville, N. J.

Kidde

Looking ahead with Asbestos

"WATER WHEN WE NEED IT WHERE WE WANT IT..."

"That's what an airfield *has* to have—a 'grid' system of mains under the field with outlets everywhere. Water must be handy to fight a hangar fire or to service aircraft on the field. It calls for lots of pipe-laying—and with no time to waste—that means one kind of pipe... 'Century' Asbestos-Cement Pipe. It's not bulky or heavy—it's *light*—can be handled *fast* with a minimum of labor. Has simple, flexible couplings, too, to make assembly easy.

"I watched them install K&M 'Century' Pipe here—and believe me, it's what our hometown will have, when I get back to water works engineering."

It's what a lot of towns will have. In fact, with the immense wartime demand for this modern pipe relaxing somewhat, we can now supply some municipalities with limited amounts for government-approved work.

The advantages of this adaptable, economical pipe just begin with its handling ease and rapid installation. Its smooth bore reduces friction, saves pumping costs. The bore *stays* smooth, too. No corrosion or tuberculation will change the flow area of this pipe ... to steal carrying capacity and pressure.

At K&M, as with other manufacturers, war needs have inspired research, developed new products and new ways to make them, boosted production to an all-time high.

We believe that Industry with its new, war-born capacities and abilities can and will use them to create work and opportunity, and better living for all.

* * *

Nature made asbestos;
Keasbey & Mattison, America's asbestos pioneer,
has made it serve mankind ... since 1873

KEASBEY & MATTISON

COMPANY, AMBLER, PENNSYLVANIA

Makers of

asbestos-cement shingles and wallboards; asbestos and magnesia insulations for pipes, boilers, furnaces; asbestos textiles; asbestos electrical materials; asbestos paper and millboard; asbestos marine insulations; asbestos acoustical material; asbestos packings; asbestos corrugated sheathing and flat lumbers; asbestos-cement pipe for water mains

K&M best in asbestos

FOOD and OIL are inseparable!

Familiar and *significant,* in the home countryside of Pittsburgh Steel Company, are lush harvest fields that sprawl at the feet of numberless oil derricks.

The simple beauty of one softens the stark utility of the other, and *together* they symbolize the unquestionable FACT that FOOD and OIL are inseparable.

Let that FACT sink in.

Both food and oil spring from the earth, but without *mobility* made possible by oil (and gasoline which comes from oil) that food would rot on the very soil that gives it life.

Tractors standing idle in the barns . . . silent gasoline engines that should be powering sprayers and threshers and grinders . . . idle produce and fruit and cattle trucks . . . *these* fill no empty stomachs.

Yet this tragedy *could* be . . . yes, *may* be . . . unless something is done at once to encourage new exploration and discovery, thus re-establishing our fast dwindling oil reserves.

The *oil producing* industry has vital need *now* of incentives that make "wild-catting" for new oil sources profitable . . . of equipment, tools, pipe and casing to do the job . . . of adequate man-power . . . of *your* help through full *understanding* that *mobility* is the force of America and mobility depends on *oil.*

MOBILITY **is the Force of America**

...and Mobility depends on OIL

PITTSBURGH STEEL COMPANY

Grant Building Pittsburgh, Pa.

SERVING THE PRODUCING AND REFINING INDUSTRIES WITH DRILL PIPE, CASING, OIL WELL TUBING, REFINERY PIPING

The
BIRTH OF AN
N·B·M
BRONZE
PART
Millions of bronze parts are "delivered" by our foundry every year—small and large, simple and complicated, and in any shape that designing pencils may conceive.
We can turn out immediate orders within required delivery time, or help you with your long-range postwar planning.
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NATIONAL BEARING
METALS CORPORATION
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AMERICAN
Brake Shoe
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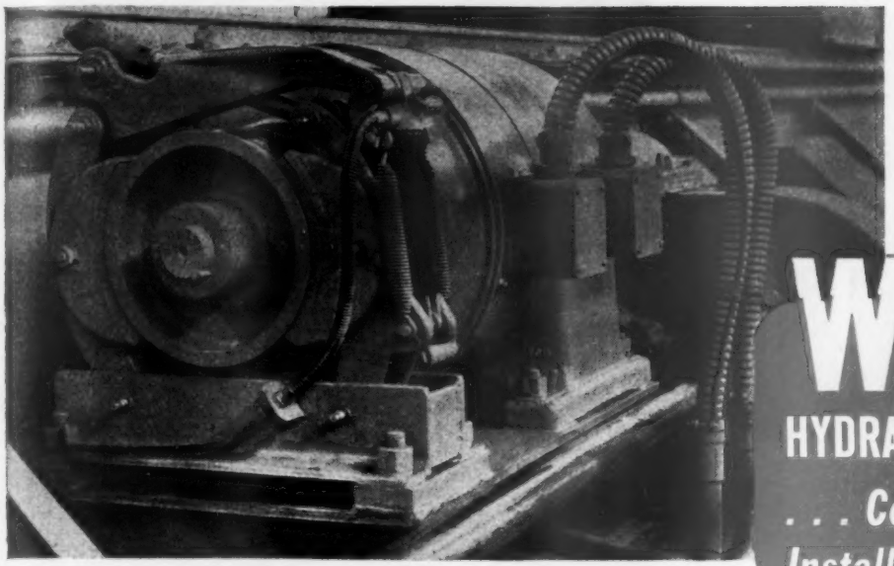
PLANTS IN: ST. LOUIS, MO. • PITTSBURGH, PA. • MEADVILLE, PA. • JERSEY CITY, N. J. • PORTSMOUTH, VA. • ST. PAUL, MINN. • CHICAGO, ILL.



MODERNIZE YOUR CRANES *with* WAGNER HYDRAULIC BRIDGE BRAKES

. . . Complete—Ready to Install on New or Old Cranes

Today, when every minute of production time is needed to hasten Victory, you cannot afford to neglect the efficiency and safety of your overhead crane brakes. The way to obtain "top" brake efficiency is to install Wagner hydraulic bridge braking systems.

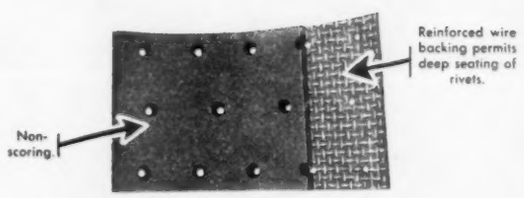
Wagner hydraulic bridge braking systems come in two types: type H for inside cranes, and type HM for outside cranes where an automatic parking attachment is necessary. A few of the many points of excellence of Wagner hydraulic bridge braking systems are: —**1.** Easy one-point adjustment . . . **2.** Exclusive anti-drag device . . . **3.** Hardened pins, knurled to prevent rotation . . . **4.** Bushings at all points of maximum wear . . . **5.** Grease fittings on all hinge pins . . . **6.** Extra-thick friction blocks are bolted to the shoes . . . **7.** A nation-wide service organization through 25 branches.

The complete system includes everything necessary—brake assembly, brake wheel, master cylinder, wheel cylinder, tubing, flexible hose, brake fluid and all fittings.

Brake Wheel furnished with bore as specified.

Brake Assembly—Type H illustrated is for inside cranes. Type HM for outside cranes

BRAKE LINING . .



Preformed in blocks to fit all makes and sizes of crane brakes.

Wagner molded wire-backed blocks have the following advantages: **1.** Non-abrasive—will not score brake wheels . . . **2.** Suitable for use with any type of brake wheel . . . **3.** Preformed to size and molded to wheel diameter . . . **4.** Wire-backed to permit deep seating of lining bolts or rivets . . . **5.** Molded blocks save installation time because they are easily applied . . . **6.** Available from Wagner branch stock . . . **7.** They reduce inventory by eliminating excessive stocks of roll-type lining which is generally purchased in long lengths in order to obtain the best price.

WAGNER INSTALLATION and SERVICE INSTRUCTIONS

Users of Wagner hydraulic braking systems, as well as every maintenance man responsible for the safe and efficient operation of overhead cranes, should have this bulletin on brake installation and service instructions. This new bulletin gives full installation and maintenance information and will be sent upon request. Write today for bulletins IU-18B and IU-20.

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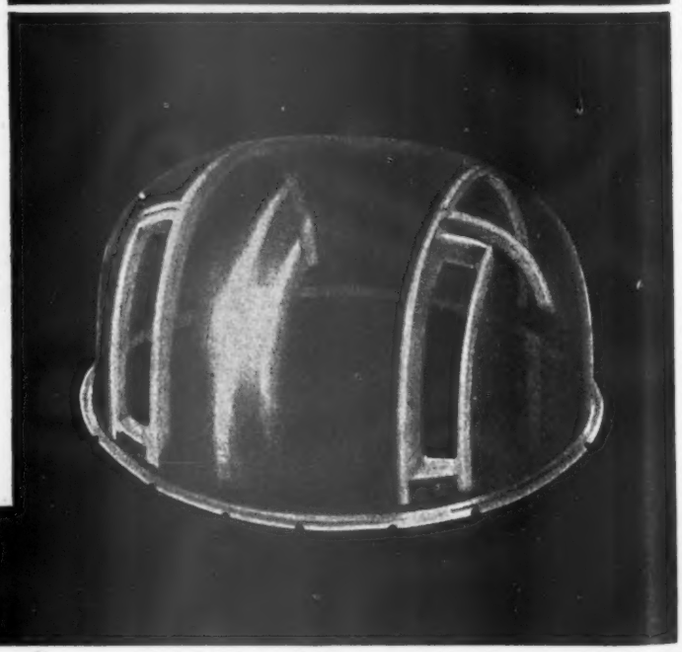
Molded PLASTICS BY Reynolds



SPECIALISTS in plastic molding for over 22 years Reynolds is now using the versatile knowledge of its experienced organization 100% on war work. Its compression, injection and extrusion presses are turning out vital plastic parts. Its sheet forming department is delivering transparent, lightweight, turret canopies, that enable fighting planes to fly faster and higher and carry heavier loads of deadly promise for the enemy.

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5 REFUSING TO "PORCUPINE"
6 MAKING LANG-LAY MORE SERVICEABLE
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AMERICAN CHAIN & CABLE COMPANY, Inc., BRIDGEPORT, CONNECTICUT

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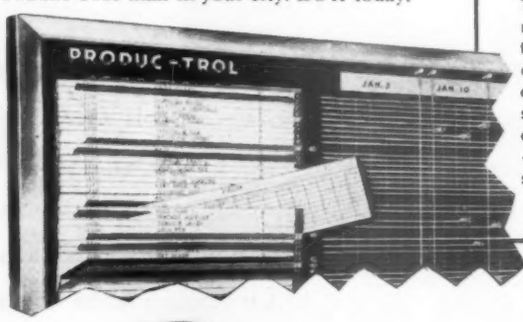

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PURCHASING PREVIEWS

From the Washington office of

PURCHASING

National Press Building
Washington, D. C.

October 1, 1943

For Purchasing Executives:

GOVERNMENTAL POLICIES CONCERNING DOMESTIC ISSUES will, during the months ahead, be largely tinctured by political considerations. Members of Congress have come back from their home States, where they have had close contact with their constituents--and their ideas will have been adjusted accordingly.

Selective Service, labor controls and price and rationing controls will be the major issues. Vying with these problems in importance are the questions of taxes, Governmental contracting policies and farm production.

Selective Service is generally conceded to be an efficient operation. Inequities in the system have been admitted, but few complaints of maladministration have been made. The major problem will be to fill the ranks of the two-ocean Navy, which is just being launched in numbers. Coming late in its claim for manpower, and traditionally demanding younger men of high physical standards, the Navy will force the issue of drafting pre-Pearl Harbor fathers and of calling men from deferrable jobs in industry and on the farm. Key to the Navy's policy will be an effort to obtain the youths from the farms and factories, and only such fathers as meet their age and physical requirements. Selective Service and the War Manpower Commission will require the Navy to accept older men for shore establishments and land operations, but will likely accede to the demand for young men for sea duty.

* * *

WAR MANPOWER COMMISSION POLICIES have been only vaguely defined. WMC claims that it has been stymied in doing an effective job of manpower control because of lack of funds. Two instances cited are the shortage of funds for operation of the United States Employment Service and for a program of full labor utilization. War Manpower officials will counter congressional demands for efficiency with requests for operating funds. Were labor used as efficiently in this country as in Britain, it is claimed that the shortage of labor would soon be corrected. WMC will not actively seek adoption of National Service legislation--unless and until Congress shows itself of a spirit to adopt such legislation. This course is considered to be most politically expedient --and politics have played a dominant role in this Government agency. If the labor stabilization plans fail to bring supply and demand for labor into balance, the outcome will be some form of national service legislation.

* * *

FURTHER INCREASE IN TAXES IS CONSIDERED INEVITABLE. Special war taxes may be levied against luxury products, such as alcoholic beverages and tobacco. Higher income taxes will likely be proposed. Strong sentiment for a national sales tax may develop as a means of further drying up such spending power as may exist.

Contracting policies of the armed services will come under closer scrutiny of Congress, and with a full realization of this development, the Army and Navy will take further steps to tighten up their procurement policies. No drastic change in policies will develop. The renegotiation processes will continue in the same pattern. A uniform termination of contract clause policy will be agreed upon, with a view toward quick settlement of contracts.

Farm output increases will be obtained largely through incentives to farmers to plant such crops as the Department of Agriculture determines as necessary. Using the support price mechanism--which is in

fact a subsidy--the Department of Agriculture will stimulate output of basic food crops.

* * *

CENTRALIZED CONTROL OVER BILL OF MATERIALS has been established, with the purpose of eliminating duplicate requests for bills which have been made by various Claimant Agencies, acting independently as they have in the past. Simultaneously, rules regarding requirement of materials data have been modified, eliminating the possibility that manufacturers will be called upon to furnish Complete Detail Bills of Materials. In any case, where a complete Detail Bill is required, it will be compiled in Washington from Bills available in the various Claimant Agencies and WPB Industry Divisions as listed in the Central Bills of Materials Index file.

This Central Bill of Materials Index File has been developed by the Controlled Materials Plan Division, WPB Industry Divisions and Claimant Agencies. The file will index all Bills on Class B products and certain Class A products which have been obtained by the Industry Division or Claimant Agency.

Claimant Agencies and Industry Divisions are now instructed to contact the Central Index file before requesting prime consumers to submit a Bill of Materials on an end product. If a Bill is available on the item, the request will not be made. If a Bill is not available, the Claimant Agency will request material information on the Class A items involved and a listing of the Class B items in the unit terms shown on the Official Class B Product List.

When required Bills are not available according to listings in the Central Bill of Materials Index file, WPB Industry Divisions will request additional Bills on some Class B items.

* * *

RECENT JOINT STATEMENT by the War Department and the Lend-Lease Administration on the subject of procurement of drugs for shipment to foreign countries under Lend-Lease assistance, indicates that this country will not attempt to conform to the taste and custom in foreign countries on civilian drug and medicine supplies. Supplies of standard items will be made available, and where specialized products are required, the importing nation will have to apply to regular commercial channels. This will simplify both the Lend-Lease procurement problem, and the production problems.

Statement covering the procurement policy follows:

"It is the policy of the Lend-Lease Administration and the War Department to provide under Lend-Lease only those drugs and medical supply requirements deemed essential to the defense of the United States and the furtherance of the war effort. It follows therefore that it is not the policy of the Lend-Lease Administration or the policy of the War Department to supply under Lend-Lease the total requirements of drug and medical supplies of a given Lend-Lease country.

"Drug and medical supplies required by any country, but not acceptable for procurement under Lend-Lease, should be obtained through normal commercial channels.

"As a general guide to aid Lend-Lease nations in organizing their future requirements, drugs and medical supplies will not be considered for procurement under Lend-Lease unless they are:

"1. Listed in the Medical Supply Catalog of the United States War Department.

"2. Listed in the Pharmacopoeia of the United States.

"3. Listed in the National Formulary of the United States.

"4. Declared essential by the National Research Council, U. S. Public Health Service, or other recognized medical authorities in the United States, or

"5. Required as raw materials or intermediate products for the manufacture of items in the above lists or comparable items on similar lists in the country of destination, subject to the general requirement that they be essential to the defense of the United States and the furtherance of the war effort.

"As stated, the above list is a general guide only. Depending on the surrounding circumstances, Lend-Lease may handle special items which do not appear in the above lists or may refuse to handle requirements which do so appear. The governing factors, as indicated in the beginning, are the essentiality of the end-use and the practicability of government procurement of the item involved."

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IT'S "BOUND TO GET THERE" WITH *Acme Steelstrap*

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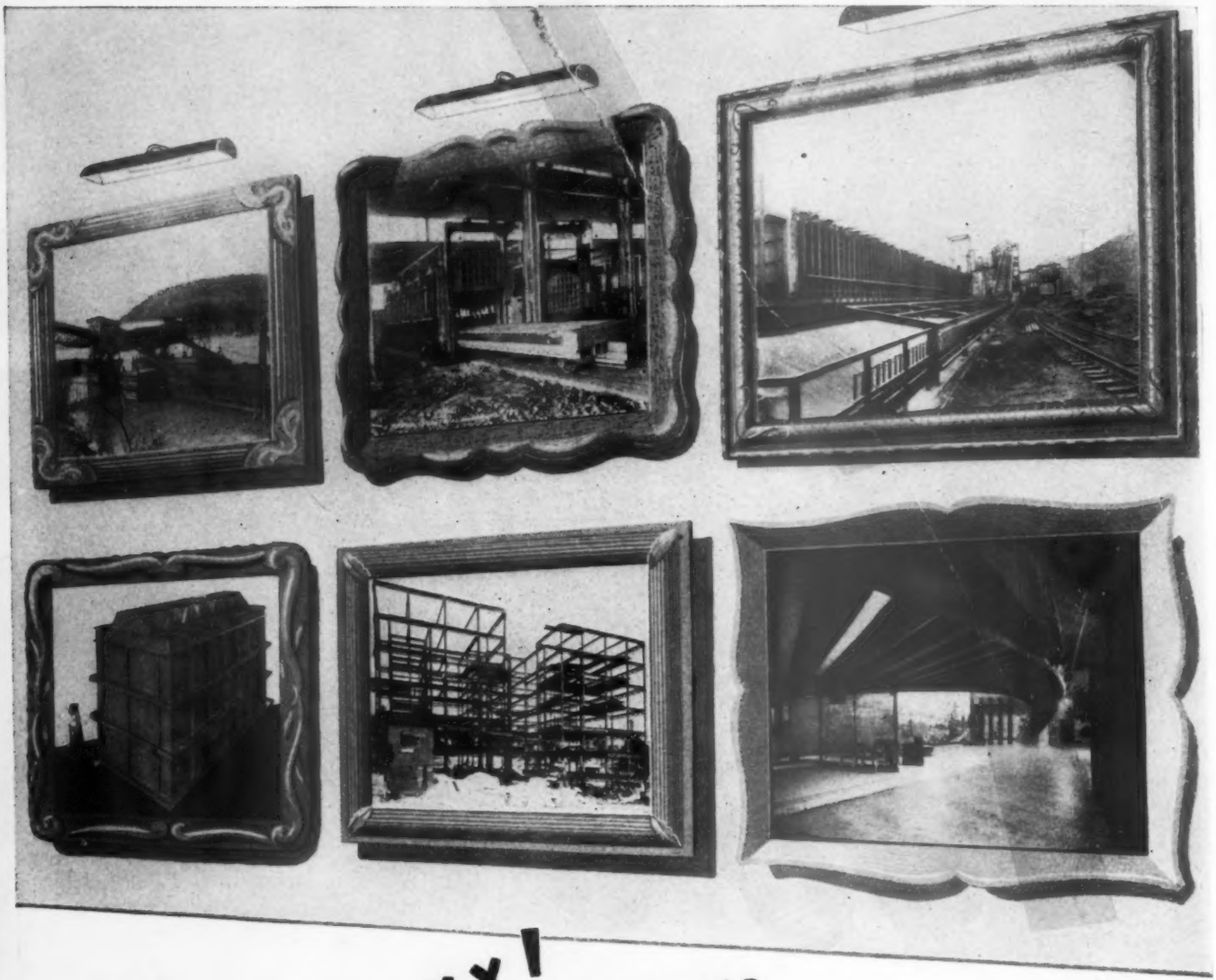

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The reason we ask these questions is that our thinking starts at *your* end of the problem of buying parts for the products you make, or parts for maintenance.

We are not merely to supply parts. Our Research and Engineering Departments are working right now with similar departments in many companies to improve materials and designs of the parts they are using.

The problems they are working on, have to do with such factors as alloying irons and steels for special applications; improvements of bearing metals; grain flow in forgings; increased precision of casting; the relations of stress analysis to design. And many others of like nature.

In some cases they affect the size of parts, and hence the amount of metal. In others, the question of sand or centrifugal castings versus forgings, or a different alloy.

Brake Shoe is constantly enlarging its research and engineering facilities. Right now an Experimental Foundry is nearing completion and a Development Machine Shop is projected.

If you have a special parts problem, or if you are especially concerned with the questions discussed above, write to R. B. Parker, American Brake Shoe Company, 230 Park Avenue, New York 17, N. Y., and tell him what is on your mind.

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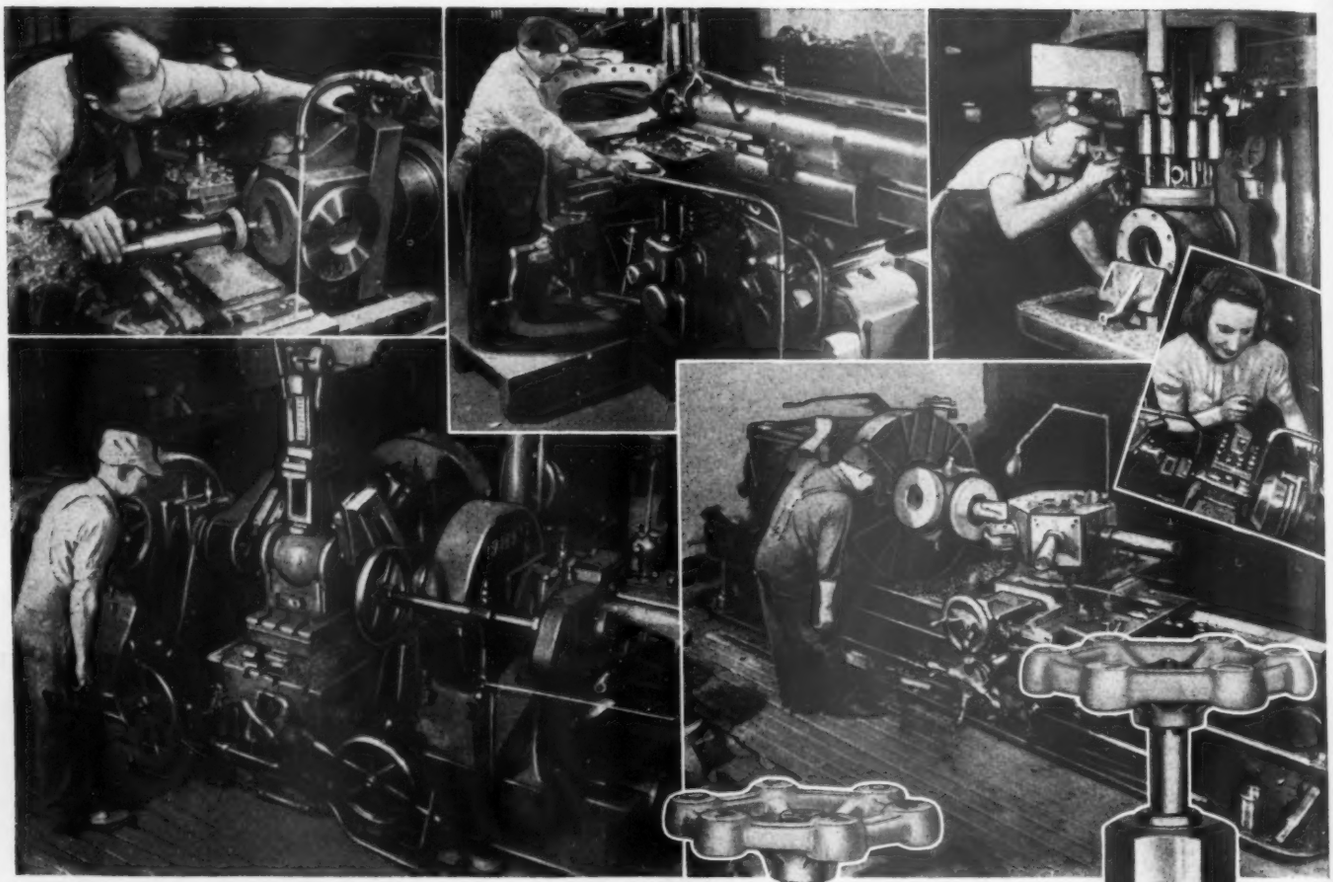

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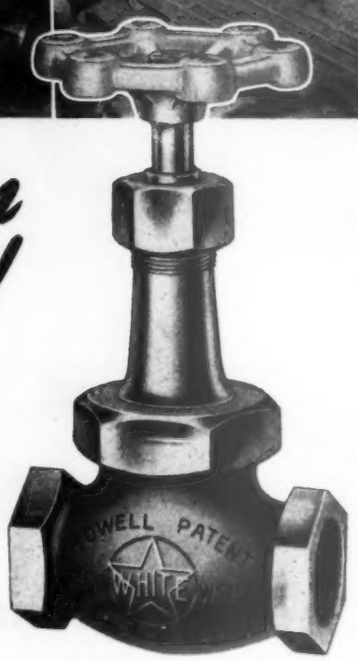
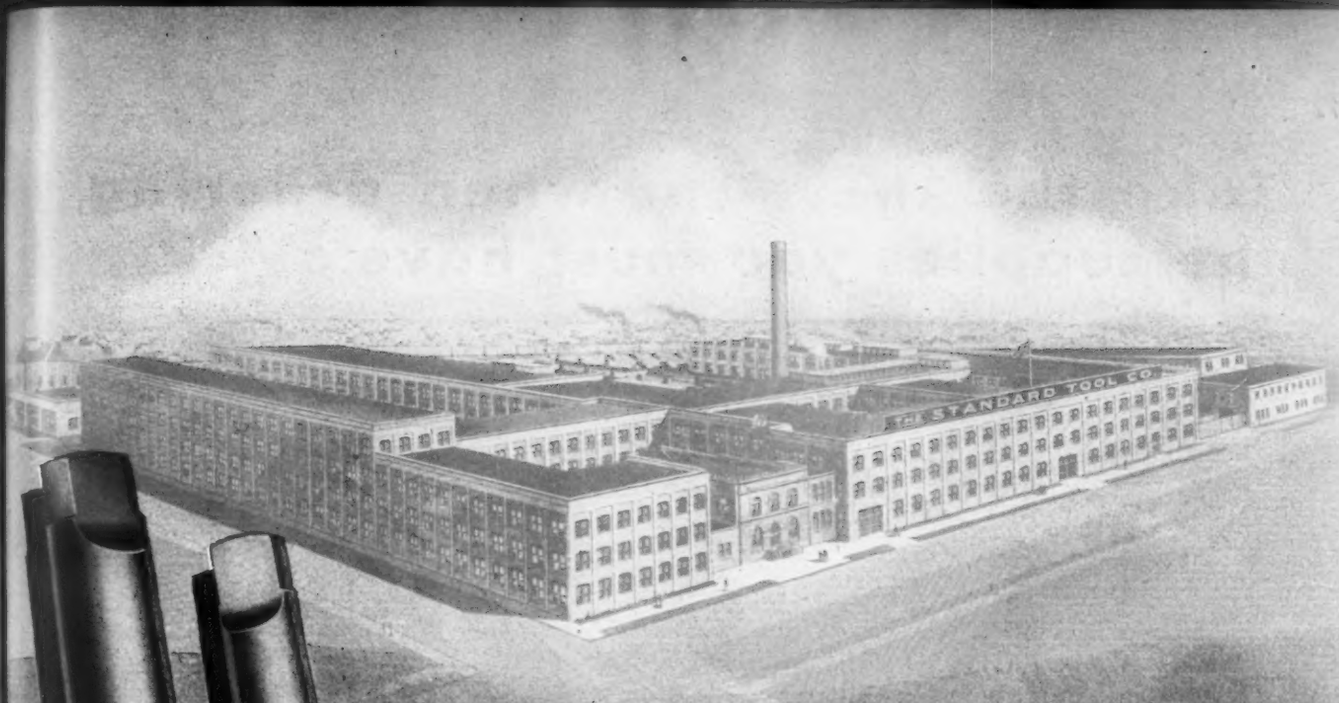


Fig. 1708—Bronze Globe Valve for 200 pounds W. P. Has screwed ends, union bonnet, renewable seat and regrindable, renewable hard bronze semi-cone plug type disc — especially adapted for throttling service—for the control of low-pressure steam, oil, water, gas, etc.

Fig. 375—Bronze Gate Valve for 200 pounds W. P. Has screwed ends, union bonnet, inside screw rising stem and a special hard bronze disc.

POWELL VALVES



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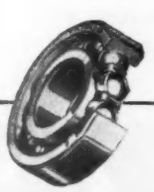

FAFNIR

BALL BEARINGS

Graybar supplies the electrical "production staples" that go into secret electronic devices

A manufacturer recently received a contract to build electronic devices. Although well-qualified for the work, this plant had never before been required to buy the scores of electrical "bits and pieces" required in this type of assembly.

He appealed to Graybar for procurement help. Products of more than a dozen different suppliers had to be mobilized without delay. Several of these production items were a type on which major producers were completely "booked up".

Graybar's wide knowledge of sources of supply was equal to the emergency. First, enough of the parts were located to get production started. Then, a coordinated plan for *scheduled delivery,* keeping pace with the actual need for parts, was set in motion. A single contact with GRAYBAR'S local office eliminated the need for a multiplicity of inquiries, and centralized responsibility for follow-up.

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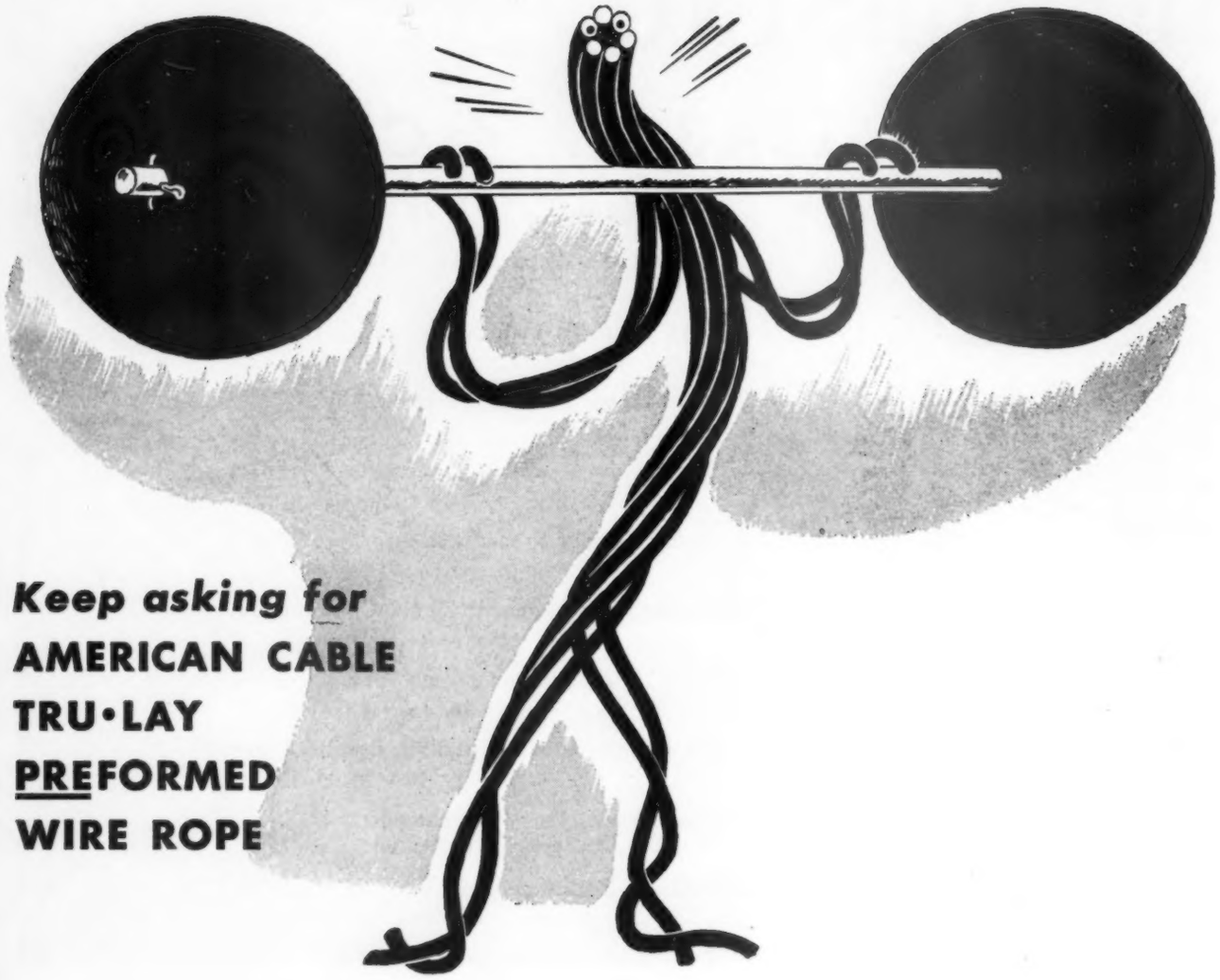

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INVENTORY JITTERS

INDUSTRIAL purchasing programs today are geared to the highest production rates in history. Commitments are based on war contracts of staggering proportions. With every new and cheering report of military successes, purchasing men are sobered by contemplation of the problem of what will happen to their contracts if and when the materials of war are no longer needed. That day may not be imminent, for military experts agree that the hardest part of the struggle still lies ahead, but it is coming closer with every passing week.

There has been a foretaste of what may develop in the cutbacks incident to changing tactics and constantly changing types of warfare in the various combat zones. The unhappy inventory experiences at the close of the last war are coming ever more vividly to mind. Ordinarily a contract cancellation does not present too difficult a problem. But in the present instance it is complicated not only by the magnitude of the operations involved, but by the fact that the majority of companies working on war contracts are dealing with materials and products foreign to their regular line of business. Even a transition to an active program of manufacturing for reconstruction would represent a radical change in requirements and operations. It is not strange that industry is suffering from inventory jitters.

Meanwhile, those in charge of the national program are disturbed, and with reason, because this attitude has an adverse effect upon production just at the time when maximum effort is needed to press our military advantage and to carry the campaigns to a successful conclusion.

The most effective means of allaying industry's fears would be a uniform policy and frank statement on how contract terminations are to be handled. The Army and the War Production Board are not yet in harmony upon this point. Uncertainty prevails, particularly as the problem reaches down through many stages of purchase to involve relations with subcontractors and with their respective suppliers. It is a purchasing problem. If someone, anyone, is to be left holding the bag, it is the Purchasing Agent's responsibility to adjust his contracts and commitments now so that his company will not be cast in that unfortunate role.

The government procurement agencies could perform no greater service to the nation and to industry which is charged with carrying out the production program, than to clarify the termination policy now. Purchasing Agents, and industrialists in general, have demonstrated that they can adapt their procedure to any set of rules, if only they know what is expected of them. It is uncertainty that breeds the jitters.

Stuart F. Heinritz

"Share the Steel" Plan Succeeding!

Idle Steel Goes into War Production

American steel-users, cooperating in the WPB's "Share the Steel" program, already have released approximately a million tons by eliminating idle or duplicate stocks, and through cancellation of mill tonnages on order. Another million tons are in prospect. This will mean the equivalent of adding two million tons of steel production for war use in the third and fourth quarters which is the goal of the War Production Board.

Constantly improving warehouse stocks help to make this program safe and practical because one stock in a manufacturer's inventory serves only one manufacturer, while a similar stock in a centrally located steel warehouse serves thousands of manufacturers. The warehouse stock moves faster and less steel is required.

The need is urgent! Let's keep every ton of steel working. It will not only help the war effort, but it is good business to hold your inventory to a practical working level. Then if increased production, changes in design or some emergency requires more steel in a hurry, you can always depend on your nearby steel-service plant.

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HIGHLIGHTS

A brief summary of outstanding features of timely interest and importance in this issue, to conserve the time of busy readers.

Contract Termination is the spectre that is bringing gray hairs to many a purchasing executive in these uncertain days. Two-thirds of war contracts may be cancelled if the war should come to a sudden end. 3,800 cancellations have already been put into effect. You can do much to soften the blow by writing your contracts properly now. The article on page 80 tells how.

Fewer salesmen are calling on the purchasing department today, and in some cases service seems to have reached an all-time low. What will be the effect on business relationships after the war? **The Good Will Problem in Today's Buying,** on page 117, presents a cross-section of purchasing opinion on this situation.

Planned buying pays dividends in efficiency and reduction of inventory losses. The article on page 105 tells the "why" and the "how" of **Purchase Budgets**—another installment of the widely acclaimed series on "Basic Principles of Purchasing".

Surplus Property will be one of the big factors affecting markets for many months to come. On page 102, Clifton E. Mack, Federal Procurement Director, tells of the steps Uncle Sam has already taken to put the surplus to work, making it available to industry as well as to other government departments.

Tremendous strides have been made in improving the buying practices of the Army. A. N. Wecksler, Washington editor, describes on page 92 the **Army Supply Controls** introduced to help every manufacturer now at work on war contracts.

When your supplier accepts a check marked "Payment in full" on a disputed account, do you believe that your obligation has been discharged? Citing **Unusual Decisions on Sales Contracts** on page 95, Leo T. Parker corrects some popular fallacies in respect to business law.

Doing business with the government, in accordance with special regulations and looking ahead to possible renegotiation, has given new importance to the **Preservation of Business Records.** A comprehensive study of this subject appears on page 171.

Substitution and design changes have raised new and perplexing problems for the buyer of electrical equipment and replacement parts for existing installations. M. Q. Allen offers some practical pointers on **Identifying Electrical Equipment.** Turn to page 90.

Industrial fire hazards, ever present and always dangerous, must be guarded against with extra care of high pressure production schedules and inexperienced help. Good intentions are not enough. The Purchasing Agent can be of great help in **Buying the Right Extinguisher** to combat the particular hazard. L. F. Maar tells how on page 85.

Inventory Jitters are threatening the output of war materials, says WPB. The editorial on page 77 urges a clarification of government policy to relieve this condition.

A prominent industrialist who has found **Air Express** an invaluable aid in the wartime conduct of his business, predicts that this latest transportation facility is here to stay as an economical service for normal industrial operations. His experience is told on page 88.

Purchasing on specifications has received great impetus in today's need for rigid quality control. N. F. Harriman, leading authority in the field, describes **Federal Specifications** on page 113—the most comprehensive compilation of its kind, constantly kept up to date, and increasingly used by industrial buyers.

Printed Forms are a considerable item of purchase in the conduct of every business. James F. Stilling, on page 99, tells what to do and what to avoid in buying forms to achieve greater efficiency at less cost.

Wartime emergency has forced reforms in government buying methods, but unless our statutes are revised, this new efficiency will be against the law when the emergency has passed. In **Let's Keep Negotiation,** page 116, James MacPherson speaks from a broad experience in purchasing for industry and government, urging that these advantages be retained.

Charles Ford, the philosopher of purchasing, considers the case of the little independent business man, with some pertinent remarks on employers' responsibility. His article, **Lone Wolves,** appears on page 119.

Don't fail to keep abreast of what's new in these rapidly changing times. The **New Products** section on page 122 lists dozens of recently developed products and equipment items that your company may be able to use to advantage. The articles are short, informative, easy to read, and illustrated with photographs. Check pages 10, 12, 14, and 16, where the latest **"Know How"** and catalog information is digested for your convenience. Use this service. This helpful material is yours for the asking.

★ ★ WHAT TO DO ABOUT C

The difficulties and shock attending termination of war contracts can be substantially lessened if Purchasing Agents will act now to set their records and commitments in order.

By STUART F. HEINRITZ

★

WAR contracts upon which American industry is currently engaged are estimated at approximately 102 billion dollars. They represent the requirements of equipping and arming a military and naval force of 11 million men and prosecuting a two-hemisphere war. That is the assignment with which the high command is faced. Until the victory objective has been achieved, or conditions have been radically changed toward that end, there will be no slackening of requirements and there can be no slackening of effort. Victory will come at a time when military operations, and the industrial activity to support those operations, are at the peak, and ready to go on. Wars and campaigns cannot be planned like production schedules, to taper off and have everything come out exactly even at the end. And the command, always hoping for the best, must always be prepared for the worst—for greater expenditure of men and materiel, for throwing in heavier reserves, for more protracted resistance. There are still 50 to 100 billions of dollars' worth of contracts to be let, and if this is not enough to do the job we may be very sure that further appropriations will be made in any amount, however large, that may be necessary.

There may be changes in requirements, as the strategy and nature of warfare changes, as the conflict shifts to new theaters, and as new and better weapons and equipment are developed. Witness the cutbacks and cancellations that have already taken place. Military and war production leaders have pointed out that for each cutback there have been new—and usually larger and more urgent—orders to replace it. The overall program has not been curtailed.

BUT—the time is coming, and it is coming closer with every passing week, when these requirements will end, more or less abruptly. The cutbacks have been an indication of what this will mean to industry. After all, to the plant that has been working on a single product, one small part among the myriads of things needed in the prosecution of the war, the overall program is of merely academic interest. For that plant there has been a termination problem. It leads logically and inevitably to concern about the termination problem that will face all war industry when the war comes to a close.

What's Ahead

What may be expected? Based on the experience of the previous war, and a careful study of the present situation, business statisticians estimate:

1. That if the war should end quickly, about two-thirds of present contracts would be promptly terminated, amounting to some 68 billion dollars.
2. That the process is likely to be more gradual, in two stages—first, the end of the war in Europe, and second, the end of the war with Japan.
3. That an early victory over Germany would result in the termination of about one quarter of present contracts—about 25½ billion dollars—and a continuation of war production at about 75% of the present rate.
4. That the end of the war with Japan would result in the termination of about two-thirds of the contracts then in effect.
5. That cancellations will be heaviest in respect to Army equipment and supplies, but will be proportionately heavier on naval and maritime equipment than in the last war.

Two Responsibilities

We are particularly concerned here with the Purchasing Agent's

INTERDEPARTMENTAL COMMITTEE
working on
STANDARD TERMINATION CLAUSE

Frank L. Folsom, Navy Procurement Division, Chairman.
Brig. Gen. A. J. Browning, Army Service Forces
Clifton E. Mack, Director, U. S. Treasury Procurement Division
Abbott Smith, Smaller War Plants Corporation
Allen Coe, Office of Price Administration
Stanley F. Teele, Deputy Director, Procurement Policy Division, War Production Board

Final drafting of uniform contract termination provisions to be incorporated in all government contracts is promised by the middle of November. The project has been under consideration for about a year, and procurement agencies are not yet in agreement on major policies involved. Several drafts of a proposed clause have been issued by WPB, but none of these have been adopted.
If you have any suggestions, particularly in respect to the handling of payments to subcontractors, write to Lincoln Clark, Secretary, Procurement Policy Board, War Production Board, Washington, D. C.

CONTRACT TERMINATION ★ ★

CONTRACT TERMINATION POLICY AFFECTS PRIME CONTRACTORS, SUB-CONTRACTORS, AND THEIR SUPPLIERS

GOVERNMENT PROCUREMENT AGENCIES ↓	WPB favors having the government accept responsibility for contract adjustment through the first stage of subcontracting, in case of a termination. This coincides with the policy on renegotiation. Navy is inclined to favor a similar policy.	Army contends that the government's responsibility ends with the prime contractor as the only supplier having an actual contractual relationship with the government.		The proposal has seriously been made to outlaw contract terminations and to continue the production of unneeded war goods as a means of avoiding unemployment pending reconversion to manufacture of civilian goods. Similar proposal of the Labor Department in 1918 was turned down. Alternative possibility is allowance of severance pay as a reimbursable cost, to speed termination procedure. This would require legislation by Congress, and is already under study. Strong possibility, favored by many industrialists, is legislation to set up a uniform termination policy and clearly defining terms and procedure applicable to subcontracts.
PRIME CONTRACTOR ↓		Purchasing Agents' responsibility would start here. This corresponds with normal business practice and contract law. But conditions are not normal, in view of contract uncertainty and commitments which may be many times greater than the company's working capital. Thus purchasing for the prime contract becomes much more difficult. Purchase contract clauses on termination generally aim to safeguard the buyer by following adjustment clauses in the prime contract, or by making adjustments dependent on the adjustment received from government. Sellers object to "tying their kite to another's string" and fear long delays.	Smaller War Plants Corporation is interested chiefly in the subcontractor group, wants quick adjustments and assured payment for these companies, would like to see government responsibility on termination extended all the way down the line for those working indirectly on the prime contract. Small contractor, several stages removed from the government's prime contract, is in a precarious position if dependent on a series of prior adjustments in which he has no voice.	
SUBCONTRACTOR (FIRST STAGE) ↓	Purchasing Agents' responsibility to provide for adjustments with their suppliers on terminated contracts would start here, and would apply to each successive stage of subcontracting and purchasing.			
SUB-SUBCONTRACTOR ↓				
SUPPLIERS ↓				
ETC.				

part in meeting this problem. He has a dual responsibility. First, and most important from the standpoint of national interest and of implementing his company's contribution to the war effort, he must arrange for and maintain a steady and adequate flow of materials to the plant up to the very moment of contract termination. No considerations of caution or hedging must be permitted to interfere with this primary aim. Secondly, so far as possible, he must maintain his company's position in regard to inventory and commitments so as to present the least burden and difficulty in the event of a termination and in the consequent adjustment.

In military operations it is desirable both to maintain the initiative and to keep open a line of retreat. The same principle applies to this purchasing problem. The buyer who is concentrating now on hedging his commitments is not likely to do the best job for necessary war production. That this attitude has already made itself felt is indicated by statements from the War Production Board that "inventory jitters" are even now having an adverse effect on output. The answer is rather to *put the purchasing program in order* against the day of contract termination—not to retrench or retreat, but to see that the way is open for orderly and equitable termination all along the line.

Government Policy

Government agencies have given much thought to this problem for nearly a year. A general pattern has been proposed that indicates an eminently fair approach to the problem. It includes acceptance of all completed products, payment of costs and a percentage of estimated profits on uncompleted portions of the contract, and prompt settlement of claims. One important point on which unanimity of opinion has not yet been reached, and which has stood in the way of developing a uniform termination clause applicable to all contracts, is the extent to which governmental responsibility for adjustments and reim-

SPECIMEN TERMINATION CLAUSES FROM INDUSTRIAL CONTRACTS

I

If the Purchaser's contract for which the articles or materials covered by this order are to be used is terminated in whole or in part, the Purchaser shall have the right to terminate this order in whole or in part upon notice in writing to the Seller. The Seller shall thereupon as directed cease work and deliver to the Purchaser all completed and partially completed articles or materials and work in process, and the Purchaser shall pay the Seller the following:

(a) The price provided in the order for all articles or materials which have been completed prior to termination and which are accepted by the Purchaser.

(b) Actual expenditures made by the Seller in connection with the incompleted portion of the order, including reasonable cancellation charges paid by the Seller on account of commitments made under the order.

(c) Reasonable estimated profits on the incompleted portion of the order multiplied by the percentage of completion of the incompleted portion of the order.

The provisions of this paragraph are without prejudice to the rights of the Purchaser in the event of any failure on the part of the Seller to comply with the delivery schedule or other provisions of the order.

II

Without prejudice to any other rights which we may have hereunder, and in addition thereto, we reserve the right by written notice to you to cancel this contract (order) in whole or in part, as to undelivered items, and hold you responsible, upon breach hereof by you, including but without limitation, defects in material, equipment, or workmanship, noncompliance with drawings, instructions or specifications, or delay in delivery not caused by conditions beyond your control, or if you shall be adjudicated bankrupt or shall file a voluntary petition, or consent to or fail to contest a petition, under the Federal Bankruptcy Laws, or if a receiver or trustee of a substantial part of your property shall be appointed, or if you shall file an assignment under any insolvency act or make an assignment for the benefit of creditors.

Furthermore, our main agreement or agreements with the Government or with a supplier or suppliers to the Government, to which this contract (order) relates, are subject to termination. We must, therefore, and do, reserve the right by written notice to you to terminate this contract (order) in whole or in part at any time and to give you instructions with respect to delivery of articles, equipment, tools, facilities and raw materials, complete, in process, purchased or committed for hereunder and with respect to completion of unfinished work. Upon any such termination such equitable settlement with you will be made as, in a reasonable exercise of judgment or in the judgment of the appropriate representative of the Government department concerned if such department shall act in the matter, most nearly conforms with the principles used or to be used in terminating our main agreement or agreements; and your right to such a settlement shall be exclusive and in lieu of any other rights which you might otherwise have. No failure on either your part or our part to reach such a settlement shall alter the foregoing; and in no event will you be entitled to receive a sum greater than that allotted specifically or pro rata under the main agreement by the Government department concerned if such department shall act in the matter.

III

The United States Government has the right in certain contingencies to terminate said Contract, and in such event it becomes liable for all obligations, commitments and claims that the Buyer herein may have in good faith undertaken or incurred under said Contract. Upon such termination, and notice thereof to the Seller, the Buyer will be relieved of all liability hereunder and the Seller will look to the Government for payment for all articles which have been manufactured in accordance with the terms of this contract and have not been delivered or shipped to the Buyer, and for the cost to Seller of all articles in process of manufacture under the terms of this contract and all commitments made in good faith by the Seller for material required in the performance of this contract, less the recoverable value of such work in process and such materials.

bursement shall be applied to the subcontractors under a prime contract that is cancelled.

Army purchasing officials take the stand that their contractual responsibility extends only to the prime contractor with whom the contract was made, and that any arrangements which he may have made with subcontractors and suppliers in the course of filling that contract are matters for him to adjust. This, of course, is quite in accordance with customary business practice and with the principles of legal responsibility. It poses a difficult situation, however, under the extraordinary circumstances of war production, when purchase commitments may—and frequently do—amount to many times as much as the company's normal working capital. The Army has also declared for immediate settlement of claims, to help the prime contractor meet these obligations and thus to give prompt relief to the smaller subcontractors who are least able to meet the financial strain imposed by a sudden cancellation.

The Purchase Policy Division of the War Production Board has proposed that government responsibility for adjustment be extended to the first stage of subcontractors under the prime contract. While this exceeds strict interpretation of the contract, it is justified on three counts: (1) that subcontractors' legitimate claims are an allowable factor of cost in settlement of the prime contract; (2) that it is consistent with the right of renegotiating subcontracts; and (3) that a good deal of subcontracting policy has been undertaken at the urgent insistence of the War Production Board itself. There are some who advocate even further extension of governmental responsibility to subsubcontractors, incorporated in a standard termination clause, with the purpose of safeguarding the small plants' position and aiding them toward quick conversion to civilian output.

Handling Subcontracts

Outside of reasonable prudence in the accumulation and handling of inventory, which is largely controlled by CMP and other limiting regulations, it is probable that the Purchasing Agent's chief problem in respect to termination will lie in the field of these subcontracts, negotiated and signed in the purchasing department, and committing the company's funds to purchases.

The indications are that govern-

ment cancellations in this war are to be handled somewhat more considerately than at the conclusion of the last war when, in the words of one adjustment officer, "We tried to keep the next shift from entering the plant." Nevertheless, termination is a very positive word. The contract, and all arrangements made thereunder, will be brought to a quick halt, and it will be essential to stop all subcontracts promptly so far as the hope of getting reimbursement for the commitments is concerned. This will be a responsibility of the Purchasing Agent. It is his responsibility now to see that the way is cleared toward speedy and orderly termination, on a basis agreed upon in advance, offering the maximum of protection to both buyer and seller under today's conditions.

Purchasing Agents ordinarily have no part in the negotiation of their company's sales contracts, and this is true of the war contracts under which so many companies are working today. However, one of the first steps that every Purchasing Agent must take in order to write his subcontracting and purchasing contracts intelligently is to study his company's contract and to familiarize himself with its provisions, particularly the clauses relating to termination and settlement. Only in this way can he know what the status of his stocks, commitments and contract adjustments will be, as allowable items of cost, and the extent to which the supplier can be protected in turn. When the time comes for audit and adjustment of accounts, it will be exceedingly important that his own contracts are fortified with an "escape" clause and that this shall be drawn up to conform with the conditions that are imposed upon his own company as a seller.

It is true, of course, that any contract can be cancelled or voided by non-performance, which, in the case of the buyer, could consist in refusal to accept the deliveries called for. But if the supplier or subcontractor is not in default at the time of cancellation, he has the recourse of securing damages under the contract, either through arbitration or court action. Such a settlement is to be avoided if possible, particularly since the contingency can be foreseen through the termination clause in the purchaser company's contract with the government or prime contractor. It is undesirable because of the uncertainty of the settlement and because of the strained relationships which

Every Purchasing Agent should study the war contracts under which his company is working, whether prime or subcontracts, with special attention to the termination clauses. In the case of subcontracts, a copy of the terms on the governing prime contract should also be secured.

WHAT TO DO ABOUT INVENTORIES

Keep inventories fluid and at lowest practicable levels without jeopardizing production.

Schedule deliveries as closely as possible to actual need.

Do not depend on CMP allotments to accomplish this for you. There are some cases in which the interpretation of government regulations may define "lowest practicable working inventory"; otherwise quantities may have to be justified.

Expendable supplies used in production are an allowable cost *when used,* but may not be reimbursable if merely purchased in anticipation of use. Specify standard operating supplies wherever possible.

Keep purchase and inventory records, and physical inventory of materials and supplies, separately for each war contract.

WHAT TO DO ABOUT CONTRACTS

See that all contracts are in writing, complete, and properly executed. Informal contracts and letters of intent were responsible for most of the difficulties and delays in the adjustments of 1919. Commitments that are without legally binding force can not be recognized in government adjustments.

See that all war contracts contain a termination clause specifically setting forth the manner of adjustment. Otherwise, termination involves a claim for damages that may require arbitration or litigation, and may jeopardize your own company's claims for adjustment.

See that the basis of adjustment in case of termination is consistent with the terms governing termination of your company's own contract.

P. S.—Remember that you may want to do business with your subcontractors after the war.

THE PURCHASING EXECUTIVES RESPONSIBILITY

P. A. IS NOT RESPONSIBLE for:

Terms of the contract under which his company is operating.

Arrangements for the adjustment of his company's sales contract upon termination.

Protection of the company's profit position with respect to adjustment of uncompleted portions of a terminated contract.

Adjustments on plant, special machinery, and other items of capital investment; inventories of finished goods and goods in process.

P. A. IS RESPONSIBLE for:

Seeing that his own contracts with suppliers are correlated with the terms and conditions of the sales contract, and in such form as to be a valid basis for adjustment and reimbursement.

Arrangements for the termination and adjustment of contracts with subcontractors and suppliers.

Accurate records of purchases, costs, materials and contract commitments applicable to the terminated contract, segregated for positive identification and ease of audit.

Status of inventory of materials and supplies, including purchase commitments that are outstanding at the time of contract termination.

are likely to result from such action. Furthermore, an unnecessary risk is taken in that such damages may not be recognized as an allowable cost when the government makes adjustment on the prime contract. However liberal the government policy may be on this point, it can not condone or underwrite carelessness in the contractor's buying procedure. The regulations covering disbursement of public funds are, properly, very strictly drawn.

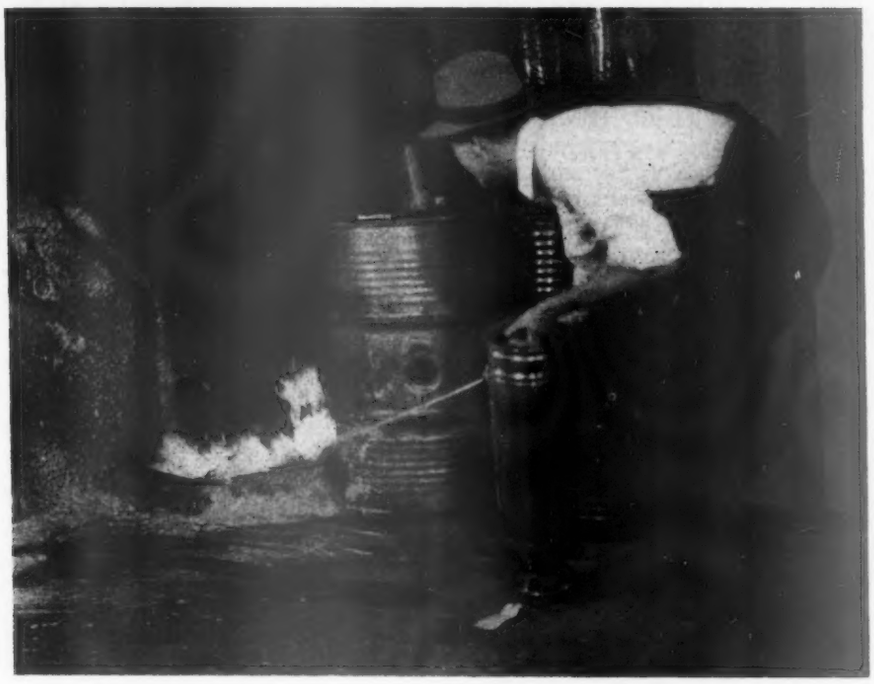
Termination Clauses

The form which the termination clause should take generally follows the terms and conditions of the government's termination clause rather closely, and may be tied in with a reference to that governing clause. This policy has a strong advantage for the buyer in that the principles of equity would dictate the acceptance of such an arrangement and the settlement made under it as a proper basis for calculating allowable costs on the uncompleted portion of the prime contract. Likewise it extends the best possible protection to the seller in that it tends to offer the resources of government, represented in the settlement of the prime contract, as security for payment rather than the resources of the buyer's company alone, regardless of the extent to which government may be willing to accept direct responsibility in any standard termination clause and procedure that may be developed. Spokesmen for the Army purchasing organization, which has been the staunchest proponent of making this a buyer's legal responsibility, have nevertheless expressed themselves as in favor of going so far as to make advance payments and guaranteed loans to war contractors, pending final settlement, earmarked for the payment of subcontractors' claims.

W. L. Marbury, General Counsel for the Army's purchasing division, cited a typical situation in a recent appearance before the House Military Committee in support of this plan. It concerned the cancellation of a contract with the International Harvester Company for tank production, on which the uncompleted portion of the contract represented some 225 million dollars. The cancellation affected three hundred subcontractors in the first tier below the prime contractor, and a thousand subcontractors in the second tier. Mr. Marbury emphasized that under the terms of the Army contract, there was an obligation to the prime contractor but no direct obligation to the subcontractors. Nevertheless, he testified, "the War Department is most anxious to see that small businessmen do not suffer through delays in payments due them." He said that up to that time there had been 3,800 contract cancellations since the beginning of the war. The rate is bound to increase in number and amount as we draw nearer to the end of the war.

An alternative type of termination clause seeks to make the settlement conditional upon the adjustment actually received from the government. Sellers are understandably reluctant to accept this condition, which establishes a basis of settlement only by inference and offers no real guarantee. Having no voice in the government's settlement, and protected only by the right of appeal, they feel that acceptance of such a clause savors too much of "tying their kite to another's string". A specific statement of principles governing termination and adjustment is preferable. While it is true that any termination clause in a purchase contract seeks release from obligations undertaken in the contract,

Continued on page 256



BUY THE RIGHT EXTINGUISHER ★ ★ ★ ★ ★

Fire strikes in many different forms and effective protection must be geared to the particular hazard.

By
LEONARD F. MAAR
Safety Research Institute, Inc.

TO the eyes of a plant fire chief and of the man writing the fire insurance contract, each individual industrial establishment represents not one but many fire risks. The buildings, the various processes of manufacture, the many uses of power, flammable liquids, hazardous chemicals, the flammable or combustible products or by-products, even the presence on the premises of human beings all constitute risks.

Fire Prevention Week, October 3-9, is a reminder to the purchasing department that these risks exist and that, when fire occurs as the result of them, the right type of equipment is needed and needed quickly by the men charged with fighting the fire.

Unfortunately there is no one magic that will flick out equally effectively all of the different kinds of fire that may happen. That is why the fire chief, when he requisitions new fire extinguishers or new extinguisher parts and recharging materials, specifies what is needed. Fires involving different materials are best extinguished by different extinguishing agents. But the distinctions between the different classes of fire are relatively easy to make.

Three Types of Fires

There are the fires that may occur in ordinary combustible materials such as wood, paper, rubbish, and some textiles. They can be smothered, but, in order to put them out most quickly and effectively, the temperature of the burning materials must be cooled below the temperature at which they will burn. Therefore water or water solutions of chemicals are preferred for this job.

Another class of fire is that involving flammable liquids such as gasoline, paints, oils, greases, etc., on which the use of a stream of water may be dangerous, splashing and spreading the fire, and perhaps making it burn more fiercely. These fires are most successfully extinguished by an agent that will exclude oxygen from the flames, smothering the fire.

Still a third class of fire involves live electrical equipment. Water, being a conductor of electricity, when applied to such a fire may damage the equipment by causing short circuits or may expose the person fighting the fire to an electric shock. So, in this case, extinguishing agents that are non-conductors are essential.

These are the three classes of fire, designated for convenience as follows:

Class A fires—those in ordinary combustibles.

Class B fires—those in flammable liquids.

Class C fires—those in live electrical equipment.

Reference to the chart shown here will show which types of standard extinguishers are recommended by manufacturers and underwriters for these fires.

A point that should be made for the purchasing department is that fire insurance underwriters allow

credit only for extinguishers that have been approved by the Factory Mutual Laboratories or the Underwriters' Laboratories, Inc. Such extinguishers are plainly labelled.

Because critical materials are used in the manufacture of these devices some restrictions have been placed on their present manufacture and sale, and practically the entire output of the extinguisher industry is going to the armed forces and to war plants with high priority ratings. The manufacturers have therefore developed models made of non-critical materials, which are approved under "Emergency Alternate Specifications." These may be distinguished by the letters "EAS" and the year of manufacture stamped on their labels. They can be depended upon to perform satisfactorily but cannot be expected to last as long as the standard equipment and the approval will therefore be "in effect only for the period of the war emergency."

Manufacturers and underwriters recommend that all replacement parts and recharging materials be obtained from the maker of the individual extinguisher, in order to obtain the most efficient operation of the devices. Damaged extinguishers often can be repaired, but this work should not be attempted by the owner. Such extinguishers should be sent to the manufacturer or his agent who will make certain that repaired extinguishers will function as safely as the original specifications require.

How Many Extinguishers?

The purchasing department may be curious to know what motivates the plant fire chief in ordering so many extinguishers. There are accepted minimum standards for installing the devices.

For the purpose of determining how many and where extinguishers are needed in a plant, the occupancy is classified according to the severity of the fire hazards present.

Class I occupancies are those of light hazard where, because of relatively small amounts of combustibles, incipient fires of minimum severity may be anticipated. Here, extinguishing units—an extinguisher of 2½-gallon capacity is considered a unit—are placed so that a person will not have to travel more than 100 feet from any point to reach the nearest extinguisher, but at least one unit should be provided for each 5,000 square feet of floor area. Offices fall into this category.

Class II occupancies are those such as warehouses, containing hazards of ordinary or average severity, and here units should be placed so a person will not have to travel more than fifty feet from any point to reach the nearest extinguisher. At least one should be provided for each 2,500 square feet floor space.

Class III occupancies are those of extra severe hazards, such as woodworkers, paint spraying and dipping operations, etc. Here extinguishers are located so that a person will not have to travel more than fifty feet from any point to reach the nearest unit, plus additional units as directed by the fire insurance inspection department having jurisdiction. There must also be at least one unit

Flammable liquids should be kept in metal containers and stored in metal cabinets.

Where ordinary combustibles are stored—wood, paper, textiles, etc. — extinguishers approved for Class A fires should be located. The unit shown here is a soda-acid.

When fighting fires in ordinary combustibles, an extinguisher approved for Class A fires should be used, and the stream should be aimed at the base of the fire.

SUITABILITY OF EXTINGUISHERS

TYPE	USE ON CLASS A FIRES	USE ON CLASS B FIRES	USE ON CLASS C FIRES	Action
Pump tank	Yes	No	No	Cooling
Soda-acid	Yes	No	No	Cooling
Foam	Yes	Yes	No	Cooling & smothering
Vaporizing liquid	No *	Yes	Yes	Smothering
Carbon dioxide	No *	Yes	Yes	Smothering
Loaded stream	Yes	Yes **	No	Cooling

** May be used on fires of this class where there are no strong air currents to dissipate the extinguishing vapors.*

*** An unexplained chemical action on flammable liquid fires makes this extinguisher effective on this class of fire.*

for each 2,500 square feet of floor area.

These regulations, recommended by the National Fire Protection Association, and adopted by most insurance associations and companies, apply to portable extinguishers. In addition, wheeled extinguishers of larger capacity may be advisable, and, to protect special hazards such as dip tanks, spray booths, transformers, etc., fixed extinguishing equipment, using either foam, carbon dioxide, or water spray may be installed. Fixed systems operate both manually and automatically.

The responsibility for making certain that there is an adequate number of extinguishing devices and that they are in good working condition falls upon the shoulders of the plant fire chief. He will ascertain these facts by regular inspection of all sections of the plant, making the inspections himself or delegating a member of his organization to make them. From time to time it is customary for the public fire department to send inspectors to the plant, and the inspection department of the fire insurance underwriters also will make inspections.

In plants working for the War Department, inspectors of the Provost Marshal General's office appear frequently, checking up on all fire protection devices as well as other phases of fire safety.

In storerooms or other sections of the plant that fall under the jurisdiction of the purchasing department, certain precautions should be observed and these should be worked out by the department in cooperation with the fire chief. The storage of flammable liquids or hazardous chemicals should conform to the codes and safe practices recommended by the underwriters. This usually calls for separate, fire-resistant structures, tanks and pumps of approved design. Good housekeeping is a cardinal rule of fire safety in storage areas. Goods should be neatly piled in allotted spaces so that access can be had to all parts of the area by fire fighters.

Fire Prevention Week is a good time to make an extra check on all these details, and the purchasing department should insist that no precaution be overlooked.

For electrical fires, it is important to use a non-conducting extinguishing agent. Vaporizing liquid extinguishers, approved for Class B and C fires, meet this requirement.

Extinguishers approved for Class B fires are required near flammable liquids. The unit shown here is a foam extinguisher. It looks like a soda-acid externally, and may also be used on Class A fires, but the chemicals it contains are different and its internal construction is different.

AIR EXPRESS . . . . . .

Quick and dependable delivery is an essential of wartime procurement, and transportation costs represent cheap production insurance.

By

FREDERICK B. HEITKAMP, President,

Amertype Recordgraph Corporation
New York

★

IN all production today, it is essential to meet tight schedules. We must not only meet them, but often under the handicap of emergencies which are as inevitable as they are unpredictable. Shortages of materials are bound to come up at times. In some cases these will be caused by spoilage of materials. Again, various parts may need to be replaced—and quickly. This may mean shipping from one end of the country to the other since geography means nothing in meeting production schedules today. When we do need something, we need it just as fast as we can get it, and the usual answer today is shipment by air express. Right now, the question of cost is relatively unimportant. We use air express and will continue to use it as production insurance.

Weight of Air Express shipments exceeded 21,500,000 pounds in 1942, an increase of 96% over the previous year.

Average weight of individual shipments jumped from 8 pounds per shipment in 1941 to 18 pounds in 1942. Shipments weighing 100 pounds or more are now commonplace.

The following example shows one specific use. On critical war items, particularly on tooling items, we found that we could speed up our production at least two to three days ahead of schedule, saving 48 to 72 man-hours of labor. Multiplying this out in the number of machines in operation, the saving in time and labor cost more than offsets the cost of air express.

In another of our plants, just re-

cently our honing machine broke down due to the failure of the honing shaft drive pinion. For obvious reasons we cannot describe just where or on what this machine was being used, but the product was one of vital importance. By calling the factory in Illinois, we found that they had a replacement part in stock which was shipped by air express at once. Within 24 hours, the part had been delivered and installed. Had we not been able to avail ourselves of this swift delivery service, we would not have been able to meet our production quota for the month since this machine has no excess capacity and must operate 29 days a month in order to get the job done.

We find that equally important as the actual fast transportation involved is careful attention to preliminaries so that the timing between point of origin and point of destination may be planned most advantageously. In so doing, we have found the cooperation and help of the air express invaluabe. By asking their advice and working together. more than one emergency has been handled with the utmost efficiency. The following is a typical example. A package of six important forgings was badly needed in the Detroit area. Priorities to cover army regulations were arranged for and the shipment taken by special messenger over to La Guardia Airport where it made the first available flight. This arrived in Michigan four hours later, where the shipment was delivered to the plant well before the morning shift came on.

In another plant, the hobs were found to be too hard which caused a breakage of the last hob in stock. This caused a shut-down in a vital department. The tool manufacturing company in the Middle West was able to ship a replacement part at once by air express, the shipment was delivered the following morning and a complete shut-down in our plant was averted.

Another reason that we use air express, in addition to the time saved, is that we like the way it is handled. When necessary, we are able to trace and locate the movement in transit very rapidly because of the well-kept records of the express company handling this type of business. Also, service seven days a week, 24 hours a day is of vital importance when production schedules are reckoned in hours. We can count on the co-operation of air express service at any hour of day or night in any of the larger industrial areas—and *any hour* is the time that we may happen to need them most.

The extent to which we will use this service after the war will depend on a number of factors. Competition during the period of re-tooling and re-converting will create emergency situations not unlike those of the present, if for different reasons. Once normal production is resumed, the problem will be largely one of value. If the use of air express can save us time and money, it will certainly be used to a far greater extent. Moreover, many of us have become acquainted with this service during the war and have formed the habit of depending on it.

War Production Ally

Helen Brusack, expert air cargo handler at La Guardia Field, New York, proves once again that girls can take over when necessary. Recently in an emergency, she checked every piece of air express in a 2,000 pound load, then scientifically stowed it aboard a plane. All within 45 minutes, too. Girl cargo handlers work side by side with men at La Guardia Field, ask no favors and receive none. They know that air express shipments vital to the war effort must go through at top speed.

To enable shippers to have latest Air Express shipping information at their fingertips, a "Wartime Wall Chart" is available. Containing concise information on priorities, plane capacity, weight limits, shipment dimensions, and rates, the chart can be utilized as desk folder or wall chart.

IDENTIFYING ELECTRICAL EQUIPMENT

Ordering procedure and records have been complicated by wartime changes in models and design, so that accurate description and reference are increasingly important

By
M. Q. ALLEN
General Electric Company

WITH the demand for motors, generators, controls, and their component parts so heavy today because of wartime production, the ability to identify and describe this equipment is of even greater importance than normally to commercial, engineering, development, receiving, stores, and purchasing departments.

Describing a motor, generator, or control by its rating may be adequate for identification purposes. However, this is no guarantee that the devices answering this description are necessarily duplicates from the point of view of being mechanically - electrically interchangeable, with all parts interchangeable. Therefore, a more complete descriptive reference is necessary.

Serial numbers may be stamped on the nameplates of electrical devices. These numbers either identify an individual device or are merely a combination of code numbers and letters indicating the month and year of manufacture. Therefore, it is impossible to determine whether these devices are duplicates by comparison of the serial numbers alone.

Model-Number Reference

In the case of general-purpose and fractional - horsepower motors, a model number is assigned. (Some companies assign a style number, which accomplishes the same result.) Control devices are identified by a "CR" number, and in some instances, such as panels, by both "CR" number and catalog number.

Normally so long as a manufacturer can make a certain device mechanically and electrically a duplicate of its predecessors, the same reference or catalog number is used. However, present-day manufacturing difficulties necessitate frequent changes in model and catalog numbers, although the rating of the device may remain unchanged. For example, a recent change in the ball bearings used in a motor necessitated altering the model number. This resulted in the armatures being non-interchangeable, although there was no change in the external appearance of the motor nor in its rating.

Ordering Procedure

Obviously, manufacturers do not make these changes from choice. They make them only when necessity demands. Furthermore, often it is not known whether changes of this nature are to be made until the manufacture of the device is actually under way.

Therefore, in ordering these devices, the nature of their application should dictate the policy to be followed. Where, for example, a standard 5-hp, 1200-rpm motor is used for driving a standard conveyor unit, it is preferable that all devices going to a certain customer on a given order should be duplicates, from the angles of interchangeability and carry the same reference numbers. Therefore, ordinarily it is not necessary, under such conditions, to specify model numbers when ordering motors, nor catalog numbers when ordering control devices.

Furthermore, it should be understood that when a motor is ordered by model number, this may often delay delivery. This delay is due to the difficulty of obtaining component parts which might have been the cause of a substitution and model number change. In cases where equipment is ordered by model number, it may be discovered after several weeks' delay that the manufacturer cannot supply the equipment because it is no longer possible for him to secure a certain component part.

In other cases, such as applications involving electrical equipment for close coupled apparatus such as garbage grinders, and where an agency of the Federal Government is involved, it should be known what is being furnished, and whether the devices are to be duplicated, electrically and mechanically. This is primarily because of the data sheet situation, referred to as I. B. Inserts by the U. S. Navy, and because of the renewal parts situation.

Model Numbers in Proposals

Hence, in submitting proposals or quotations, usually it is not desirable, or possible, to refer to the model or catalog numbers of the materials. However, as the material is received, there is a possibility that devices carrying different model or catalog numbers will be received on different orders for the same material. Obviously, there should be a system of recording material received by which these differences in model and catalog numbers are recognized when they occur. Reference to certified prints will not necessarily answer this question.

If reference is made to the memorandum of shipment (M/S) issued by manufacturers when shipments are made, any changes in model or

catalog numbers will be indicated. Also, reference to nameplates of the apparatus itself will indicate when the model or catalog numbers have been changed.

When material is for U. S. Navy Projects and where I. B. Inserts are required, if these I. B. Inserts are ordered along with each order they will be changed whenever changes in the model or catalog numbers make this necessary.

Purchasers' Cross-Reference

Where a purchaser has a system of assigning catalog numbers of his own standard devices purchased for re-sale, this system should include a cross-reference between the catalog number the purchaser assigns and the model or catalog number reference of the device in question. This cross-reference should also include a means by which the catalog numbers assigned by the purchaser are changed whenever the manufacturer finds it necessary to make such changes.

Under present manufacturing conditions, the purchaser's practice of assigning his own catalog number has one disadvantage—it necessitates ordering materials from the manufacturer by the model or catalog numbers.

One company developed a system for keeping such records of cross-references. For example, drawing C-152843 covers a General Electric a-c, Class BM, 15-hp, 220-volt, 3-phase, 60-cycle, explosion-tested, type KG motor. This drawing, containing a complete description of the motor, the sizes of external motor cable terminals, and other information, is sent to the manufacturer for the purpose of having him indicate the model reference. In this particular instance it is 5KG326B752 and is a permanent record of the cross-reference.

When duplicate motors are required, they are ordered by model reference. When motors of the same rating, but not necessarily duplicates, are required they are ordered by motor rating only.

All parties concerned should see or receive copies of M/S as these list devices by the model or catalog numbers and indicate when changes in construction have been necessary.

When shipping cases are marked in any manner, sometimes with identifying numbers, these markings are indicated on the M/S. Do not unpack such shipments until they are to be used because when the shipping cases are removed or destroyed this means of identification is also destroyed.

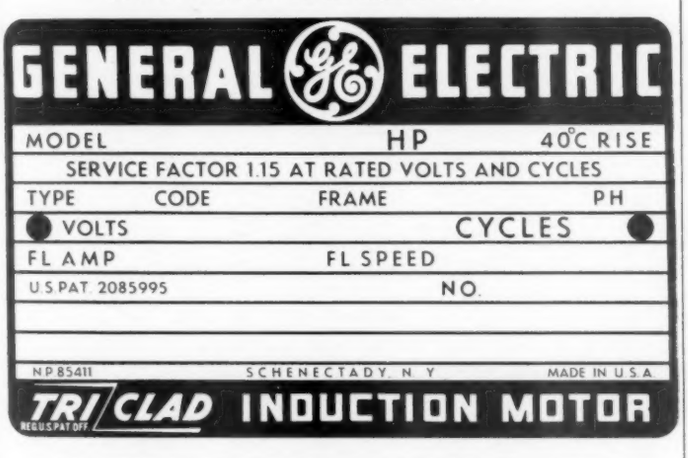
Dimension Prints

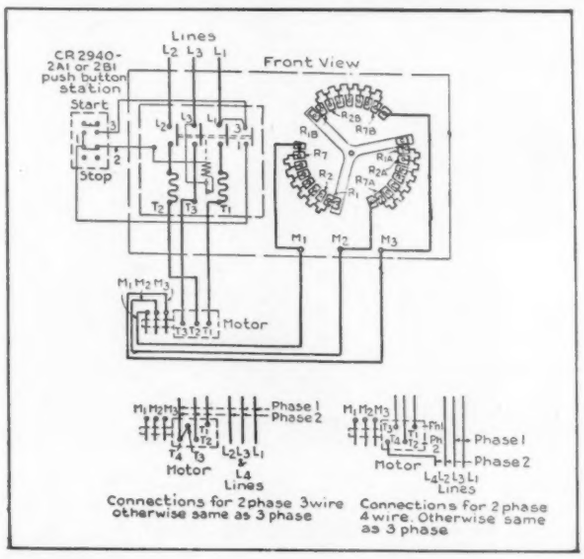
In all cases where there is any need for mounting dimensions in advance of the receipt of the device itself, certified prints should be ordered from the manufacturer.

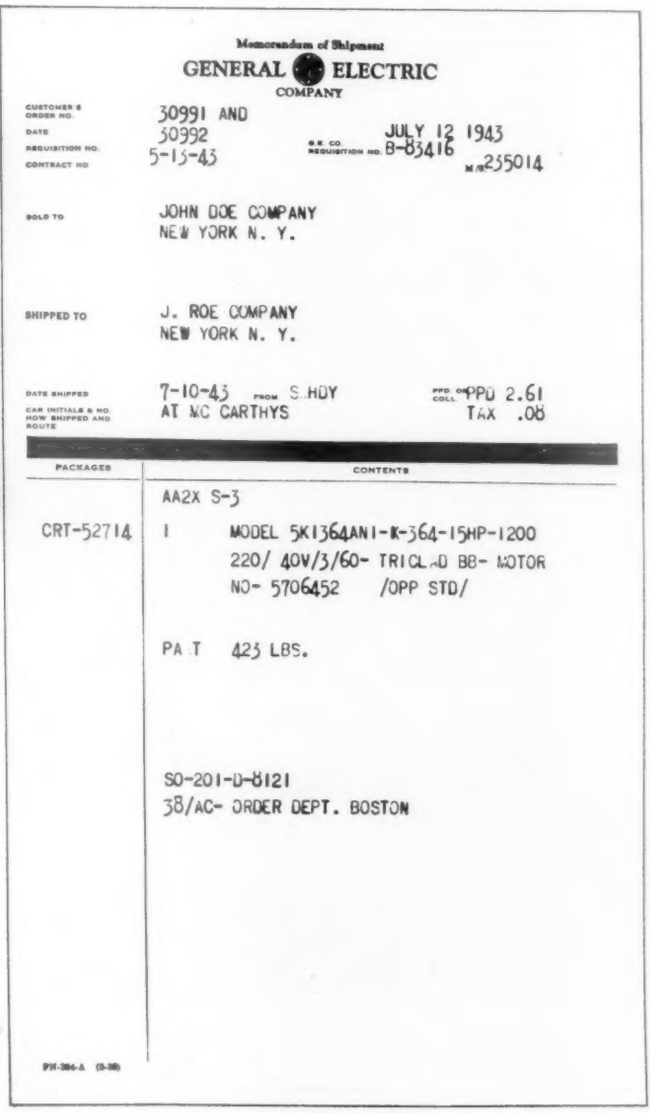
In the case of more important projects, where questions concerning dimensions may arise, it is desirable for the purchaser to request the manufacturer to furnish prints for approval before proceeding with the manufacture of the device. This has the disadvantage of somewhat delaying shipment, but it is an excellent way of preventing er-

Continued on page 258

Identification should appear on equipment, shipping documents, and installation data.







Memorandum of Shipment

GENERAL ELECTRIC COMPANY

CUSTOMER'S ORDER NO. 30991 AND 30992
DATE JULY 12 1943
REQUISITION NO. 5-15-43
G.E. CO. REQUISITION NO. B-83416
CONTRACT NO.
M/S 235014

SOLD TO JOHN DOE COMPANY
NEW YORK N. Y.

SHIPPED TO J. ROE COMPANY
NEW YORK N. Y.

DATE SHIPPED 7-10-43 FROM S.HOY
CAR INITIALS & NO. HOW SHIPPED AND ROUTE AT MC CARTHYS
PPD. OR COLL. PPD 2.61
TAX .08

PACKAGES	CONTENTS
	AA2X S-3
CRT-52714	1 MODEL 5K1364AN1-K-364-15HP-1200 220/ 40V/3/60- TRICLAD BB- MOTOR NO- 5706452 /OPP STD/
	PA T 423 LBS.
	SO-201-D-8121
	38/AC- ORDER DEPT. BOSTON

Army Supply Procedures are Simplified

Business efficiency replaces traditional methods as procurement and handling of supplies, stock records and paper work are modeled on modern industrial practice. Personnel reduced by 10% to 35%; routine procedures cut by 21%; efficiency increased by 18% to 70%.

★

War against Red Tape continues

★

By

A. N. WECKSLER

THE vast and complex job of supplying and administering the largest American army in history has required improved methods in business and industrial management which are currently attracting the attention of industrial engineers in increasing numbers.

Supplying and administering the Army is the mission of the Army Service Forces, under command of Lieutenant General Brehon Somervell. With over a million and a half officers and men and about a million civilian employees, the ASF procures and distributes all material and supplies except those peculiar to the Army Air Forces, and is responsible for administering, housing, clothing, policing, paying, and doctoring an Army now over seven million strong. ASF is actually the administrative division for the largest business operation in history.

The mere job of systematizing and streamlining this vast organization since its establishment in March, 1942, has required the officers of ASF to make the maximum utilization of industrial engineering in an incredibly short time. In this work, General Somervell has taken a determined lead. As WPA Administrator in New York City, General Somervell devised a system of statistical project reporting which enabled him to extend simple, standard, and dependable controls over the numerous and complex projects under his supervision. When recalled by the War Department to become chief of the Construction Division of the Quartermaster Corps, he established a control division aimed at careful supervision of operations down to the lowest levels of authority.

The formation of the Army Service Forces—originally termed the Services of Supply—in March, 1942, merged over twenty hitherto autonomous organizations. The Quartermaster, Medical, Signal, and Engineer Corps, the Ordnance De-

(Photos by U. S. Army Signal Corps)

Brig. Gen. Clinton F. Robinson, director of the Control Division—his division is composed largely of men from business.

Lt. Col. Mark W. Cresap—in charge of management control functions.

Lt. Col. John D. Witten—who worked with General Somervell in devising the statistical reporting system.

Lieut. Gen. Brehon Somervell, commanding general of the Army Service Forces — who established the Army's "holding company for the largest business operation in history."

partment, and the Chemical Warfare Service had been engaged in procurement and supply functions of great magnitude. They now became—with the addition of the newly-formed Transportation Corps —the seven technical services of ASF. Also coordinated in the Army Services Forces were a dozen branches and divisions of the Army such as the Offices of the Provost Marshal, Judge Advocate, and Adjutant Generals, which were engaged in administrative functions.

The Control Division

First objective of the ASF was to weld twenty old organizations into one new one. In addition, authority had to be decentralized to the field in order to prevent a top-heavy organization in Washington from being choked to death by a flood of paperwork. To meet this objective, the nine Army corps areas became nine service commands responsible to General Somervell but with full power to act on a host of administrative functions in their jurisdiction. With existing manpower limitations, there was imperative need for examining personnel practices throughout the ASF and effecting work simplification and personnel reduction wherever possible.

As one measure to help meet these problems, General Somervell immediately created a Control Division in headquarters, ASF. Brigadier General Clinton F. Robinson was named director of the division, and Lt. Col. John D. Witten, who devised statistical reporting systems in previous organizations headed by General Somervell, was brought in to adapt the earlier methods to the structure of the ASF. Colonel Kilbourne Johnston is Deputy Director of the Division, and Lt. Col. Mark W. Cresap is in charge of the administrative management functions.

Progress Reports

Recognizing the enormous extent and complexities of an operation the size of the Army Service Forces, General Somervell immediately set up in his Control Division a Statistical Branch, with the responsibility of supplying him the tools of management indispensable to an operation of such magnitude.

The statistics with which General Somervell is continually supplied keep him informed on the progress of the many services under his management control. Compiled in a series of Progress Reports, they cover such important subjects as procurement and production of supplies and equipment for the Army, distribution of supplies and equipment, status of supplies in overseas theaters, personnel and morale, conditions of the health of the Army; in short, every major function that is the responsibility of the Army Service Forces. These statistical reports are prepared through a system of reporting extending from the individual posts, camps, and stations in the field through the various levels of command up to the Commanding General of the Army Service Forces. The design of a reports system covering such a multitude of functions is one of the major accomplishments of the Control Division.

Each monthly report makes a searching analysis of successes and failures in the accomplishment of objectives established for the Chiefs of Services comprising General Somervell's Executive Board. By its constant search for facts to assist the Commanding General of the Army Service Forces, the Statistical Branch has been responsible to a considerable degree for insuring proper scientific conduct of our war of supply.

Reaching Field Operations

Composed largely of men from business—industrial engineers, lawyers, bankers, purchasing directors, experts in public affairs—the Division has no command authority but makes its recommendations directly to the Commanding General of ASF and his staff. To effect decentralization at all levels of authority, 250 additional control operations have been set up in the headquarters of ASF branches and divisions in Washington, in the nine service

commands of the United States, and in many depots, arsenal, ports, and other ASF field installations. Each of these divisions is responsible to the chief in command of the service or installation and not to the Control Division in ASF headquarters, though the latter works closely with control officers everywhere.

The work of these control organizations is to provide for the commanding officer of the service command, depot, arsenal, or other installation the same sort of advice and help as that given by the Control Division, Headquarters, Army Service Forces, to the Commanding General and his immediate staff. These control officers are responsible for the institution of more efficient methods in operations, reporting and providing statistical information to the commanding officer of the installation, and handling any special problems the commanding officer may encounter. Through the help of these organizations, the Control Division, Headquarters, Army Service Forces, has been able to inaugurate changes in procedure and method extending down to the smallest unit of the tremendous ASF organization in a fraction of the time that would otherwise have been required. Also, through this system, changes and revisions in procedure are handled by specialists at each level.

One Form Replaces Ten

Work simplification in the Control Division, ASF, takes several forms. Initiating new business procedures for use throughout the Army Service Forces illustrated by the recent adoption of a War Department shipping document which reduced ten forms to one three-part form and resulted in a large reduction in the amount of work and number of personnel at ports and depots. The shipping document was actually the work of a Procedures Committee under the chairmanship of Major General Styer and including representatives from many branches of ASF and the Army as a whole. But the details of the committee's work were under the charge of Lt. Col. O. A. Gottschalk[1] of the Control Division, and the manual establishing the new procedure was largely prepared by another ASF control officer, Major J. B. Joynt. The new War Department shipping document substitutes one three-part form for ten shipping tickets, packing lists, tally-ins, tally-outs, and hatch tallies previously employed.

Capt. Sewall D. Andrews, Jr.—formerly Purchasing Agent for General Mills, who among other assignments conducted a survey of the purchasing practices of the Army Service Forces. He is currently assigned to the Purchases Division of the ASF.

The man hours and paper work utimately saved cannot now be accurately measured, but examples occurring in a trial period suggest that savings will reach tremendous proportions. In one experiment run at Schenectady, 14 typists previously involved in copying tallies for one small section were found to be superfluous. The productivity of material checkers was increased about 30%.

The new ASF controls are closely correlated with the best industrial practice in respect to materials procurement and control. An analysis of the manuals and methods as they are adaptable to industry's usage will appear in an early issue.

The functions of the Control Division in the past year have been more in the direction of streamlining existing procedures than in establishing new ones. Where previous procedure has been completely unstandardized, the Division sets up efficient systems of control. One means of accomplishing this is through the use of a process chart utilizing only four symbols in order to study all the steps involved for possible simplification. Steps are classified into "operation," "transportation," "storage," and "inspection." A process chart describing the examination of enlisted men's induction papers in the Adjutant General's Office disclosed 20 operations, 14 transportations totalling 605 feet, 29 storages, and 4 inspections. After study, these were simplified to 10 operations, 11 transportations totalling 375 feet, 18 storages, and 2 inspections. A similar study on the handling of claims and related papers in the Office of the Post Adjutant, Fort McClellan, Alabama, reduced 27 operations to 21, 49 storages to 14, 16 inspections to 9, and 29 transportations totalling 1,752 feet to 9 involving 820 feet.

Charting Work Procedures

On February 5, 1943, 175 control officers met in Washington to receive training in making process charts for work simplification studies. A directive was issued on March 1st ordering such studies throughout the ASF. Reports up to August 15 show 5,211 process studies completed on operations involving personnel of 187,509. Reductions in personnel from this one program number 17,036, or almost 10% of the total involved. As a result of the work simplification achieved, 834 forms, records, and reports were eliminated, and 564 duplicating functions abolished. In addition, authority over the job in question was decentralized in 1,934 cases.

In the Philadelphia Signal Depot, one study saved 18% of the work steps involved and eliminated 83 people; another permitted an office to perform 18% more work with the same force. The Philadelphia Signal Corps Procurement District Office now handles 425 items a day compared to 250 before the study. The New York Chemical Warfare Procurement District eliminated 35% of the personnel involved in its work and 7 hitherto permanent records. An office layout flow chart made for the Mail and Records Section of the Rocky Mountain Arsenal

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[1]Editor's note: Col. Gottschalk's work is an outgrowth and amplification of the Red Tape Committee which was organized in 1942 as a result of PURCHASING's articles "Red Tape Must Go!", and on which he served with Chairman Earl G. Ward.

UNUSUAL DECISIONS ON SALES CONTRACTS

Many popular legal beliefs will not stand up in court because their application depends upon the particular circumstances of the case.

By

LEO T. PARKER

WINNING law suits involving sale contracts is not difficult for purchasers who know the elementary law. Obviously, the one practical method to acquire dependable legal knowledge is reading modern higher court cases in these pages in which other purchasers have been involved.

Therefore, the purpose of this article is a review of 1942 higher court decisions relating to peculiar and unusual sale contract law likely to confuse the average layman reader who has had no previous experience in similar litigations.

Validity of "As Is" Clause

Various higher courts have held that a seller is bound to two principal obligations, that of delivering and that of warranting the thing which he sells. If the thing sold is absolutely useless, or if its use so inconvenient and imperfect that it must be supposed it would not have been bought, it follows that the seller has not complied with his implied warranty. This is so because there is an implied warranty in every sale. The seller always guarantees the purchaser against the hidden defect of the subject of the sale.

Moreover, although a contract of sale clearly specifies that merchandise is sold "as is", the seller still may be liable on an implied guarantee. So held a higher court in Maddox v. Katz, 8 So. (2d) 749, reported July, 1942.

In this case a seller sold furniture under a written contract of sale which provided that the furniture was being sold "as is". Later the purchaser discovered that the quality of the furniture was not as good as he had believed when he made the contract of purchase. He sued the seller, and the court held:

"The clause 'as is' when employed in a contract of sale does not relieve the vendor of all warranty."

Bank Check Notation

A majority of purchasers believe that a person who accepts and cashes a check, having a "full payment" notation thereon, is bound by such notation. However, this is not the law, unless the account or payment for which the check is given is in dispute, and both parties expressly or impliedly agree to the notation. Under these latter circumstances only will a court hold that

the payee accepted the check as full payment.

For instance, in Sear v. Corporation, New Jersey, 30 Atl. (2d) 56, it was disclosed that a purchaser gave a check for $241.69 to a seller of merchandise. This check contained a notation on its face as follows: "In settlement of the subsisting account of $382.62."

Later the seller contended that the check did not pay the purchaser's account in full and credited the account with the amount of $241.69, and sued to recover the difference.

The account was not in dispute and, therefore, the court held that the seller was within his legal rights in crediting the purchaser's account with the exact amount of the check, thereby leaving a collectible balance on purchaser's account. This court said:

"The evidence disclosed that the check was not in fact accepted as a discharge of the demand."

Proof of Sale

Frequently a purchaser, when refusing to pay for merchandise, will testify that he did not purchase it unconditionally but that the seller agreed that if he was not satisfied he could return it.

It is important to know that if the seller can produce one disinterested witness against one interested witness produced by the purchaser, the seller will win the suit. The same is true if the seller produces an equal number of interested witnesses as produced by the purchaser.

For illustration, in Shuler Supply Company v. Richardson, 6 So. (2d) 223, reported March, 1942, it was shown that a seller of a radio instrument sued to recover $295.93, the selling price. The purchaser and his son testified that the seller agreed to send it out on approval, but the salesman and his employer testified that when the order was placed the father and son had agreed to an absolute purchase of the device. Therefore, the higher court held that the purchaser must pay the full contract price.

Seller Ignores State Law

Under any and all circumstances failure of either a buyer or seller to comply with valid state laws entitles the other to a favorable verdict. This rule of law is particularly applicable to conditional contracts for sale of merchandise.

For illustration, in Spector v. Roach, Massachusetts, 46 N.E. (2d) 402, it was shown that a purchaser failed to fulfill his payment obligations assumed in a conditional contract for sale of certain merchandise. The seller filed suit to repossess the goods but failed to comply with a state law requiring him to send the purchaser an itemized statement before filing the suit. In holding in favor of the purchaser, the higher court said:

"The purpose of requiring the furnishing of the statement is to enable the vendee (purchaser) to comply intelligently with the demand for 'the balance then due' and so to save his furniture."

Conditional Sale Law

Many contracts for sale of merchandise are conditional, and the purchaser does not get legal title until he had paid fully for the goods. It is important to know that a conditional contract of sale is a first lien, whereas a bill of sale may be worthless.

For example, in Central, 37 N.Y.S. (2d) 270, reported July, 1942, it was shown that a man, named Mackay, purchased certain merchandise under a conditional contract of sale. Several months later Mackay sold the merchandise and gave a bill of sale to the purchaser who at once recorded the bill of sale in the county recorder's office. Later the holder of the conditional contract of sale filed suit to foreclose and take possession of the merchandise on the grounds that Mackay had failed to fulfill his agreement regarding paying for the goods.

The party who purchased the goods from Mackay filed suit and contended that he had certain legal rights because he held the bill of sale which was legally recorded. However, the higher court held that the holder of the conditional contract of sale had the right to repossess the merchandise and that the purchaser's bill of sale was of no value when compared to the conditional contract of sale. This court said:

"A bill of sale has no legal status and there is no requirement in the law that the delivery of such instrument is a necessary part of a sale, nor is its filing provided for by law. Therefore, no advantage . . . is acquired by filing a bill of sale, even though a county, city, village or town clerk should accept the same for filing."

Therefore, according to this decision a verbal agreement to sell merchandise is equally as binding and effective as a written bill of sale. Furthermore, filing or recording a bill of sale gives the purchaser no additional rights.

Another important point of law respecting the sale of merchandise, and known by only a relatively few persons, is that a conditional contract of sale or a chattel mortgage recorded in any county in any state in the United States is valid and effective with respect to *all* persons in *every* state in the United States.

Obviously, it would be impractical for a prospective purchaser of merchandise to search the records of every county in every state in the United States before purchasing goods to learn whether a lien is against them. On the other hand, a person who has money due on merchandise cannot be expected by law to record his conditional contract of sale or chattal mortgage in every county, in every state in the United States.

Therefore, the first lien of a holder of a recorded conditional contract of sale or chattel mortgage is fully protected by recording the instrument in one county, whereas all purchasers of merchandise are taking chances, or in other words gambling, that no person has recorded a first lien some place in the United States.

For illustration, in First National Bank, 233 App. Din. 506, it was shown that a sheriff of a county for a creditor sold certain merchandise to satisfy a debt owed by the supposed owner of the goods. However, later a person who held a conditional contract of sale sued both the sheriff and the creditor. The higher court promptly held them liable in full damages to the holder of the conditional contract of sale.

No Market Price

It is well established law that where a seller breaches a contract to sell merchandise the buyer may recover as damages against the seller the difference between the contract price and the market price, at the time of the breach.

However, in a recent important higher court case it appeared that the purchaser could not establish the market price of the goods on the date the sale contract was breached by the seller, as there was no market price. This court explained new law on this subject.

For instance, in Benjamin Harris & Company v. Western Smelting Company, 40 N.E. (2d) 747, re-

ported April, 1942, the court records prove that a buyer and a seller entered into a contract by the terms of which the latter agreed to sell to the former one car-load of mixed scrap brass. The seller failed to make delivery of the brass on the date specified in the contract, and the purchaser filed suit to recover damages for the breach of the seller.

The lower court readily agreed that the purchaser was entitled to recover damages equal to the financial losses which he suffered by reason of the seller's breach. In fact this court said:

"The general rule is that on a breach of contract to deliver goods the measure of damages is the loss sustained by the failure to perform the agreement. While this, like all other legal propositions, is plain and simple, its practical application frequently becomes difficult and embarrassing. The law is that the vendee (purchaser) may recover as damages against the vendor the difference between the contract price and the market price."

However, it appeared that no actual and definite market price could be ascertained and, therefore, the case was appealed to the higher court with request that it decide the method of determining the amount of damages allowable to the purchaser. It is interesting to observe that the higher court held that the purchaser was entitled to recover the difference between the contract price and the market value as of the time of the breach of contract, but as there was no market price the purchaser was entitled to damages based upon the market value of the *constituent elements* of the brass. In other words, the court had the right to award damages on the basis of the difference between the contract price and the market value of the constituent ingredients of brass of the type purchased as of the time of the breach of the contract.

Seller Fully Liable

Modern higher courts hold that all sellers are fully liable for all losses sustained by the purchaser as damages and incidental losses, as a result of a legal breach of the sale contract.

For example, in Field v. Jones, 8 So. (2d) 711, reported July, 1942, it was shown that a person sold a quantity of steel that did not belong to him. Later when the buyer discovered that the purchaser did not own the steel he sued him to recover the purchase price, plus damages sustained as a result of the false transaction.

It is interesting to observe that the higher court held the seller fully liable.

Authority of Salesman

Modern higher courts hold that all purchasers dealing with a seller's agent or salesman are bound to ascertain the extent of agent's authority.

For example, in Busch, Inc. v. Grevier Company, 128 F. (2d) 146, reported August, 1942, it was disclosed that a purchaser entered into a contract with a manufacturer's agent who appointed the purchaser the exclusive wholesale distributor of the manufacturer's product in a designated territory for as long as the manufacturer continued to manufacture beer.

The manufacturer refused to approve the contract and the purchaser filed suit to compel the former to fulfill the contract made by the salesman.

It is important to know that this higher court held that if a salesman has no actual or real authority to make a contract, the employer, or seller, is not liable under such a contract unless the purchaser proves that by past conduct the salesman of the manufacturer had implied authority to make valid contracts. This means that in order to win a litigation of this kind the purchaser must prove that in the past the salesman's employer either notified the purchaser that the salesman had proper authority to make valid contracts or the manufacturer was accustomed to approve all contracts made by the salesman.

Also, see Cox, 128 F. (2d) 488, reported July, 1942. In this case it was shown that a salesman made an oral agreement with a purchaser and at this time told the purchaser that his employer would prepare a written contract which would include all of the terms of the oral agreement. When the purchaser received the contract it contained a clause which stated that the manufacturer's agent had no authority to make a valid contract. The purchaser signed the contract without carefully reading it and while believing that it contained all of the oral promises made by the manufacturer's agent and salesman. Later when the purchaser discovered that the contract was not the same agreement, as orally promised by the salesman, he filed suit.

However, it is interesting to observe that the higher court refused to hold the manufacturer liable on the contract and explained that it was the duty of the purchaser to investigate and learn whether the salesman had unusual authority before relying upon a contract made by the salesman.

Free Storage Contract Void

Modern higher courts hold that all contracts made in violation to valid laws, or valid regulations of an authorized Board, Commission, etc. are void. Therefore, neither a warehouseman nor a common carrier may make a valid or enforceable contract to transport or store merchandise at a rate less than that established by the tariff schedule.

For example, in Hanaman v. Liberty Company, 7 N.W. (2d) 609, it was disclosed that a purchaser stored merchandise in a warehouse. The owner of the warehouse promised, so the purchaser testified, to store the goods free of charge because the purchaser was an old customer.

DO YOU BELIEVE

That selling goods "as is" relieves the seller of all warranty?

That acceptance of a check marked "Full Payment" cancels the balance of the account?

That a bill of sale is positive evidence of title to merchandise?

That a market price can be established for all purchased goods?

That an owner can accept free storage on a warehouseman's promise?

Study the decisions reported in this article before you argue the case with the Judge.

Later the warehouseman refused to deliver the goods until a bill of $63.35 for storage, was paid. The purchaser contended he was not liable for payment of the storage charges because, as above explained, the warehouseman had promised to make no charge for storage of the goods.

It is interesting to observe that the higher court held that the warehouseman had a valid lien on the goods until both the transportation and storage charges were paid. This court said:

"Defendant (storage company) was not only authorized, but was positively required to make the scheduled charges for storage and the lien therefor could not lawfully be waived. . . Any promise or understanding that there was to be no charge for storage would clearly be unlawful and void."

Obviously, this same law *ordinarily* is applicable to all contracts where objects are illegal. In other words, all contracts of every kind, nature and classification are, under ordinary conditions, void which violate valid laws. But, it must be remembered that present war and emergency conditions may change or vary the ordinary law.

Emergency Modifies Contract

For illustration, modern higher courts consistently hold that contracts involving defense work must be strictly construed in view of quickly and efficiently effecting completion of the defense or related contract.

For example, in Ross v. Taylor, 12 So. (2d) 153, it was disclosed that a construction company was awarded the contract for the building of a large military camp for the United States Government at what is now Camp Shelby, Mississippi. A man named Taylor contracted to sell to the construction company the sand and gravel materials with which to build the streets, roads, and motor courts for the camp. Taylor, by written contract, contracted to purchase *all of the materials needed to fulfill his contract* at 3c per cubic yard at gravel pits owned by a property owner named Ross.

Taylor mined and delivered a total of 141,728 cubic yards, the aggregate price of which, at 3¢ per yard, was $4,251.84, but he mined from the pits of Ross only 54,145 cubic yards, amounting to $1,624.35. Ross sued Taylor to recover damages for breach of the contract.

During the trial the testimony proved that the engineer of the construction company had notified Taylor that the pits of Ross did not contain sufficient metal in the materials. Therefore, in view of this testimony, the higher court refused to hold Taylor liable for breaching the contract. The court said:

"Time was an important element in Taylor's job. Even if sufficient materials of proper quality could have been located on the entire Ross tract, vet if it was in spots, time and expense would have prevented Taylor from moving his machinery from place to place on the lands to find sufficient quantity of the right quality."

It is important to know that under ordinary circumstances the higher court would have held Ross entitled to recover damages from Taylor, particularly because the contract did not specify that Taylor could obtain the material elsewhere if material could not be obtained quickly and economically from the Ross pits.

Restrictive Contracts

Modern higher courts recognize the fact that trade secrets, confidential information, lists of customers names, and the like are valuable property. Furthermore, employment contracts are valid by which a Purchasing Agent, or other employee, agrees not to accept employment with a competitor for a reasonable period in the territory in which the employer's customers or patrons are located. Generally, five years is considered by the courts as a reasonable period.

For illustration, in Briggs v. Butler, 45 N.E. (2d) 757, reported January, 1943, it was shown that an employee was employed under a contract which contained a clause that he would not for a period of five years, from the date he left the employment, engage himself with another employer in the same or similar kind of business. The employer expended money in training the employee who soon afterward resigned and took employment with a competitor.

The first employer filed suit against the employee and asked the court to grant an injunction to prohibit him from continuing the new employment. The higher court granted the injunction, and said:

"The clear purpose and effect of the contract is to prevent or at least to limit the appropriation of the benefits of information and experience secured in service with the plaintiff (first employer) and the employment thereof for his own personal advantage and to the disadvantage of the plaintiff by becoming a direct competitor, as in fact did occur in this instance. . . For the reasons indicated, we are of opinion that under the facts disclosed by the record the restrictive covenants of the contract entered into by and between the plaintiff and defendant do not impose a restraint beyond that reasonably required for the protection of the employer in his business . . . and are therefore valid and enforceable."

The reasons restrictive contracts of this nature are valid are first: A business is built upon the confidence of its customers and an employee gains acquaintances by using the good will of the employer; and, second, the employer's dealings with his customers through the employee gives the employee confidential knowledge that should not be divulged or used for his own benefit.

Therefore, a contract intended to protect the employer by restriction of subsequent employment of the employee, within reasonable limits of time and territory, is permitted and sanctioned by the courts.

SEEK WIDER UTILIZATION OF PIGSKIN LEATHER

A task group has been appointed to investigate the possibility of increasing leather supplies through greater utilization of domestic pigskins, according to Harold Connett, Chief of the Leather and Shoe Branch, WPB.

The slaughter of hogs averages approximately 80 million head annually. However, only small amounts of leather are now produced from this kill, because the skin is usually left on the cuts of meat in the form of rind. It is hoped that substantial additions to the leather supply may result from this investigation, despite the fact that there are serious obstacles to be overcome.

The task group has been requested to investigate the suitability of pigskin leather for upper leather, sole leather, glove leather, and other uses, and the steps necessary to accomplish the maximum leather production from the hog slaughter.

The task group consists of representatives of the various industries utilizing pigskin leather.

HOW TO BUY PRINTED FORMS

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By

JOSEPH F. STILLING

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DESPITE the current tendency to watch costs less closely than usual, keen postwar competition will undoubtedly be responsible for a revival of interest in cost reduction. Alert management, however, will not wait until the last moment to consider ways and means to cut costs, but will do so now; expense incidental to investigation and reorganization may be easily absorbed during the present period, and resultant benefits enjoyed on a continuing basis. Investigation may show, for example, that the responsibility for purchasing printing has been delegated to someone with little conception of what can be accomplished in the exercise of that function. This presents the opportunity to initiate a program for efficient printing procurement through which substantial economies may be effected by careful study of the physical characteristics and functions of printed matter.

Centralization of Control

Centralization of forms control is the first step in the development of a really comprehensive program for printing procurement. This may be done through a special division in the large company, working closely with the purchasing department, or as a special responsibility of some member of the buying staff in the smaller organization.

The program should be under the direction of a Forms Supervisor who is not only well acquainted with printing production and the principles and methods outlined, but who can win the cooperation of department heads in agreeing to recommend changes in existing specifications. Since the Forms Supervisor will find it necessary to confer with all department heads and many employees, he should be invested with authority sufficient to properly impress others with the importance of his work.

The Forms Survey

The initial step in the buying program consists of making a forms survey.

Several samples of each form in use should be forwarded to the Forms Division. Coincidentally, information should be submitted concerning existing inventory; annual consumption; last price paid; ownership and location of printing plates, etc.; purpose of form; department and location where used; how filled in; how filed; functional relationship to other forms; registration with other forms; approximate number of times handled; length of time preserved.

Reference File

When the samples are received, one complete set should be mounted in book form as a permanent reference file.

The others should be analyzed and recommended specifications recorded on individual data sheets to which they should then be attached.

Every detail should be recorded —form number; size; substance, color, finish, grade, grain of stock; color of ink; style of type; number of sides printed; serial numbering; perforations; punching; round-cornering; padding or binding; folding; cover; number per set; sequence of interleaving; how produced (by letterpress, photo-offset, etc.); number of forms per standard package.

Then the most difficult part of the forms program must be tackled —obtaining approvals for proposed changes. In this connection, much depends upon real executive support, without which a forms program is well-nigh impossible of accomplishment.

After approvals have been obtained, file numerically all forms with approved data sheets attached.

Do not be surprised if the survey reveals—as it probably will—sizeable stocks of obsolete forms in the stockroom and elsewhere. Often these obsolete forms have been designed and ordered by someone who mistakenly thought they would be suitable or necessary for a given purpose. Review by the Forms Division of all requests for printed matter will materially reduce, if not altogether prevent, the procuring of such incorrect or unnecessary forms.

Standardization and Simplification

Standardization, implying the determining of that which is best for any given purpose; and simplification, implying the elimination of excess variety—are means whereby substantial economies may be effected.

It is probable that investigation will reveal that several forms may be discontinued entirely; this not only saves the cost of producing, but —more important—the cost of using, which obviously is many times greater.

In other instances, it probably will be discovered that forms may be combined; the entire cost of printing one of the forms involved will thus be saved in each such instance.

Frequently, forms may be redesigned to reduce cost of using, as well as of producing. The former reduction may be achieved by rearranging text so that it is in proper sequence and spaced according to office machine use; by eliminating all unnecessary items, thus reducing the amount of filling-in necessary; and by printing all recurring items.

Review all forms used in sets, with a view to making all or most copies alike in respect to text, size, paper, ink. By also showing the distribution of all forms within a set, on each copy, it will be possible to reduce the number of different plates or typesets required, and may eliminate collating.

Standard Layout

General form layout standards should be established so that users will find in the same location items common to the several forms within each functional group. The standardization which has been effected in such WPB forms as PD29, PD532, PD159E has become a classic example of what can be accomplished. Formerly, these forms were relatively cumbersome and confusing and bore no obvious relationship to each other or to their general function; now they conform to layout standards which render them readily recognizable and generally much simpler to use.

In the interests of legibility and

uniformity, it is advisable to standardize on one of the better-known modern styles of type, such as Gothic. Gothic type is particularly recommended for photo-offset lithography, since it photographs extremely well.

Every form should be logically numbered in order to facilitate forms procedure and to indicate its general function. For instance, Production forms might be numbered PRO 1, 2, etc.; Purchasing forms PUR 1, 2, etc.; with similar series for other major departments.

Furthermore, a form used in a number of different plants or locations may be prefixed "G/" to indicate that it is in general use; a numerical suffix may be appended to the form number to indicate specific locations, when the particular location is actually printed on the form.

Some Things to Avoid

With proper inventory control, only the form number need be printed—not the date when ordered, order number, quantity, printer. Printing only the form number obviates the necessity for changing the legend at every printing. However, if a form is revised, REV and the date should be added to the form number.

Avoid printing names of individuals on forms and letterheads. This prevents the obsolescence of printed matter when changes of personnel occur; it also permits uninterrupted running of printed matter, the text of which is alike in all respects except for individual names.

Review all forms to insure that the proper stock is used. It is not uncommon to find forms intended for permanent preservation printed on sulphite stock, or forms for temporary use printed on rag-content stock. While the potential loss from the former is more serious than the actual loss from the latter, both may be avoided by observing the following standards: for internal forms of a temporary nature, receiving little handling, use #2 or #4 sulphite stock; for external forms and for internal forms of a more permanent nature, use #1 sulphite stock; for really permanent forms use rag-content stock—the percentage to depend upon the length of time the form is to be preserved. Generally, sub. 16 stock is satisfactory for forms printed on one side; sub. 20 for forms printed on two sides; sub. 8/9 or 13 for manifold use, depending upon the number of copies to be made.

Wherever possible, arrange forms for group printing; the press cost per form may thus be reduced to a minimum since the total press cost is distributed over the entire group. The number of electrotypes required for each form is kept to a minimum and paper cost is reduced since it is purchased in large rather than in small lots. In order to combine forms for printing, however, they must be of standard sizes, which will cut from basic paper sizes with as little waste as possible. Bonds and ledger papers, for example, are obtainable in 17x22, 19x24, 17x28, 22x34, 24x38, 28x34, 34x44. While there are well over one hundred different sizes which can be cut from basic sizes, it is advisable to standardize on not more than ten or twelve—for which, incidentally, stock binders and filing equipment should be available.

Shown herewith is an example of a typical forms combination, such as is possible when the variety of form sizes, inks, and grades, colors and weights of paper have been reduced to the minimum.

Planning the Order

Forms should be ordered in multiples of 500, to conform with ream lots of paper, and trimmed sizes should always be specified. Be sure that ganged forms are arranged so that they may be cut apart after being printed.

In the author's opinion, the use of colored papers and inks in business forms is largely unnecessary. Both production and paper are usually more costly, and, furthermore, printing and typing (particularly carbon impressions) are not generally as legible as on white paper. There is no doubt, however, that colors may be used to perform a definite identifying function in certain instances—the necessity for which will be found to be far less frequent than expected.

Except in the case of ledger papers and card stock, the direction of the grain is usually unimportant; where it is important, it will be determined by the use of the form, taking into consideration the fact that paper bends more easily parallel to the grain.

In view of current limitations in paper production imposed by the WPB through Order M-241, it is advisable, where practical, to reduce individual printed matter sizes and, consequently, overall paper requirements. Printers have been limited to a percentage of their total press for previous years, whether the paper is purchased by them or furnished by the customer, and more recently pulp producers have been required to reserve a percentage of their output for allocation by the WPB for war requirements.

Incidentally, it is interesting to note that WPB Order L-120 has helped to advance the principles of simplification and standardization by restricting the manufacture of various grades, weights, sizes, colors of paper.

Printing Economies

The means by which a piece of printed matter should be produced (whether letterpress, lithography, intaglio, or office duplicator) will depend upon such factors as its dimensions, the number of impressions required, the quality of work desired, whether reruns will be made, whether plates are available. For instance, it is economical to run only large quantities on a rotary press, due to the relatively high make-ready cost.

Specify ⅛″ less on each side that a form bleeds, in order to keep forms within standard sizes; otherwise, it will be necessary to use larger sheets and perhaps cut to waste.

When forms to be produced by letterpress are to be numbered serially, always allow a space for the number in the upper right corner, at least 1½″ wide by 1″ high. By doing this, the necessity for an extra run for numbering is obviated, since a numbering machine can be locked in the chase within that space and forms can then be printed and numbered in one operation.

Unless a form is to be reproduced by offset, specify press perforations instead of pinhole perforations in order to avoid the extra run necessary for the latter.

Economies in Printing

Avoid having forms printed and pen-ruled wherever possible. A form printed and pen-ruled both vertically and horizontally is necessarily expensive since it has to undergo at least three operations.

Avoid such costly complications of design as special initials and running composition around plates.

In machine-set composition, the payment of penalties may be avoided by keeping column widths within the standard limits of the machines.

In planning mailing pieces, carefully consider the weight of stock to be used for both advertising matter and envelope to insure that postage charges are kept to the minimum.

Photo-offset lithography is recommended for the most economical production of the majority of forms. Copy may be prepared by means of a Varityper, or a newly-developed typewriter utilizing a carbon ribbon; or it may be prepared by hand —type impressions may be purchased direct from a composing shop, glued into place and lines drawn as required. The only other composition cost is that of preparing the negative. If it is desired to effect a change in style of type, it may be worthwhile to have the form set as required and printed by letterpress. Then, on the next printing, one of the letterpress samples may be used as copy for reproduction by photo-offset. Avoid using as copy for photo-offset reproduction a form which has already been reproduced by that method, since repeated photographing of a photographed form tends to reduce sharpness of the copy and consequently of the printed impression.

It is obviously impractical to go into great detail concerning printing production and its relationship to forms design and procurement, but the foregoing are a few points which illustrate, without being too technical, how various economies in printing production may be effected.

Purchasing Printed Matter

Always furnish detailed specifications when requesting quotations. This eliminates confusion as to what is required and insures that all bids will be made on the same basis.

Group requirements and place purchase contracts at regular intervals (six or twelve months, for instance) in order to simplify purchase procedure and to avoid expensive piecemeal buying of single forms. Under certain circumstances, it may be advantageous to place a requirement contract for certain types of printed matter, extending over a period of several years.

Do not indiscriminately broadcast invitations to bid, but check the productive means of suppliers, in advance, to discover whether they can efficiently produce the printed matter required. Having this knowledge, one need obtain only a minimum number of bids and yet be sure that resulting quotations will represent the lowest, fairest prices for the class of work desired.

Do not confine all printing purchases to one printer. It might simplify purchasing to do so, but it is likely to result in considerably increased prices due to lack of competition and to the fact that each printer specializes only in a relatively few types of work. A printer may try to produce on his equipment jobs which may be most efficiently produced by other means, or he may "farm out" jobs; in either case, the customer will have to pay more than he should.

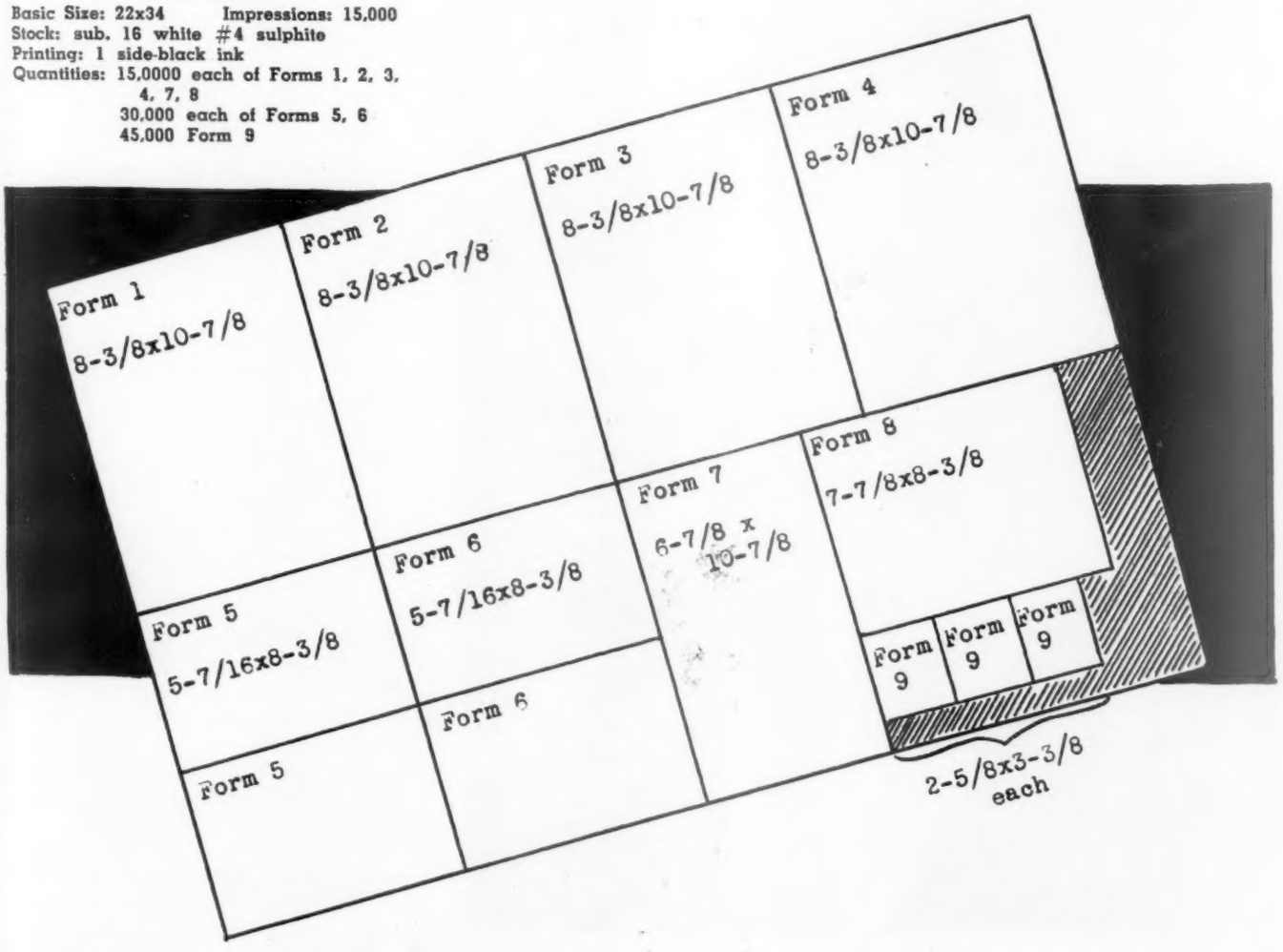
Arrangements can often be made with printers to stock forms for reasonable periods at no extra charge.

Efficient inventory control will materially reduce the necessity for placing expensive individual rush orders; it will also indicate the cor-

(*Continued on page 260*)

TYPICAL PRINTING LAYOUT
based on standard size forms and paper stock

Basic Size: 22x34 **Impressions: 15,000**
Stock: sub. 16 white #4 sulphite
Printing: 1 side-black ink
Quantities: 15,0000 each of Forms 1, 2, 3, 4, 7, 8
30,000 each of Forms 5, 6
45,000 Form 9



★ ★ ★ HOW UNCLE SAM IS H

The importance of materials in these days of shortages places new emphasis on an old problem, and new procedures have been set up to meet the situation

Demand exceeds supply

By

CLIFTON E. MACK

Director of Procurement
U. S. Treasury Department

PROBABLY one of the most intriguing signs on the American scene today is one which says: "FOR SALE". Usually, no matter what product it advertises and regardless of quantity, the demand as a rule exceeds the available supply. So far unbalanced has the situation become that we are daily finding the economic paradox of purchaser seeking out the vendor.

It is therefore not unusual that the Federal Government, in hanging out a "For Sale" sign on machinery, supplies, repair parts and equipment, is receiving an abnormal number of queries from all types of interested purchasers. Demand for government surplus property is outdistancing the volume available. Yet, even despite this, Federal surplus property of an extremely varied range, consisting of certain tools, raw materials, finished products and partially fabricated items *still remains to be sold,* and is slowly becoming available for sale in heavier quantities. This is due to the fact that the efforts to gain maximum efficiency from government property is resulting in our finding equipment surplus to our needs.

There are definite reasons for these paradoxes and it will be my purpose in this short article to explain them.

By way of preface, it should be pointed out that the Procurement Division of the U. S. Treasury Department makes available for sale to the public that property which other government agencies declare surplus to us.

Prior to this war (since 1933), in addition to those responsibilities as a central purchasing organization for the Federal agencies, the Procurement Division conducted operations to sell the above mentioned Federal surpluses. The methods employed were simply and easily explained.

Whenever an instrumentality of the Government decided any of its equipment or supplies was surplus to needs, notice was transmitted to the Procurement Division. If the property so declared were situated outside the District of Columbia, the Procurement Division did not take physical possession. It noted the type, description, condition and other pertinent information concerning the property and then, through means of a periodically issued circular, made known to other agencies the availability of such surpluses.

In general, the theory was that Federal purchasing officers in the various Departments would examine their current requests for property and, where possible, obviate necessity of purchase of new equipment by obtaining any of the

HANDLING SURPLUS PROPERTY

surplus which our Division listed. There was an economical inducement: The agency requesting such property obtained it at no cost other than that of defraying shipping charges from point of location to point of use.

Within the District of Columbia, where Headquarters of the Federal agencies are located, the procedure was slightly different. Property declared surplus in D.C. was physically moved by the Procurement Division to specially equipped yards and shops, where it was refurbished as needed. Prices, based upon the opinion of experienced appraisers, were then set and transfers with funds effected. Property not thus claimed by the Federal agencies was sold to private enterprises and the general public through sealed bid sales or public auctions.

Utilization Is Important

This procedure places the emphasis on the disposition of surpluses. The element of utilization—of deliberately attempting to *place* each piece of declared surplus in that job from which its best benefit might be derived—was lacking. True, some excellent results were obtained, in individual cases and without design. On the whole, those benefits of *utilization* which accrued were more happenstance than deliberate.

The advent of the national emergency began making more obvious the need for revision in the laws governing surplus property. Volume of surplus property transactions took a sharp drop. The reason was obvious: As industry conversion to war manufacture gained pace, supplies and equipment for the civil establishment were harder to get. Replacements became more of a problem than simply issuing an order. Government agencies debated still longer with themselves before property was declared surplus.

As America entered the war, the "problem" transcended from one of routine to one of critical import. Manufacture of many lines of goods needed in civil establishment operations was abruptly stopped. A philosophy of "make it do for the duration" developed in government as well as with the individual.

The problem became more chronic with the expansion of the Federal government. War agencies mushroomed. As additional personnel was added, equipment and supplies available had to be spread further to offer them tools with which to work. It became plain that individual, or even inter-agency plans to effect intelligent redistribution of supplies were, while commendable, inadequate. There was need for an overall, encompassing Federal plan of compulsory adherence to a given set of rules in this regard; need for one agency or a combination of agencies to make inventories of available surpluses, redistribute these to the places where they were most needed and, highly important, to make any additional surpluses immediately available to those establishments outside the Federal service which might have need of them. It was essential, also, that a priority of needs be established and that surpluses be made available to those agencies holding top priorities.

The need called not only for a duration or "stop-gap" measure, but also a permanent plan which might be carried forward into the post-war era and which could, if called upon to do so, take care of multiple surplus property problems bound to arise at the war's end.

Cognizance of the immediate problem was taken on August 31, 1942, when the President issued Executive Order No. 9235 which reads in pertinent part:

"... 2. The Director of the Bureau of the Budget, acting through such assistants as he may designate, shall:

(a) Survey supplies and equipment in possession of Government agencies and the utilization thereof. For this purpose he may require the Government agencies to submit reports and estimates in such form and at such times as he may find necessary: Provided, that in making such survey he shall utilize, subject to the approval of the Secretary of the Treasury, the services and facilities of the Procurement Division of the Treasury Department;

(b) Develop and promulgate such qualitative and quantitative standards with respect to supplies and equipment used by Government agencies as he may deem necessary to effectuate the purposes of this order;

(c) Require, when, in his opinion, such action is necessary or expedient, the transfer from one Government agency to another, for permanent or temporary use, of such supplies and equipment as he may determine to be surplus to the needs of one agency and essential to the needs of another agency . . . ."

"... 3. The Procurement Division of

Idle equipment must be redistributed

☆ REGIONAL ☆
PROCUREMENT OFFICES
U. S. Treasury Department

★

REGION I

Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont
MR. D. A. MACKAY
Regional Procurement Officer U. S. Treasury Dept.
Park Square Building
Boston, Massachusetts

REGION II

Pennsylvania, New Jersey, New York
MR. F. S. ALBRECHT
Regional Procurement Officer U. S. Treasury Dept.
76 Ninth Avenue, New York, New York

REGION III

District of Columbia, Delaware, Maryland, North Carolina, Virginia
MR. J. D. FOX
Regional Property Officer U. S. Treasury Dept.
1229-20th St., NW
Washington, D. C.

REGION IV

Indiana, Kentucky, Ohio, West Virginia
MR. E. J. DOWD
Regional Property Officer U. S. Treasury Dept.
235 West 12th Street
Cincinnati, Ohio

REGION V

Illinois, Michigan, Minnesota, No. Dakota, So. Dakota, Wisconsin
MR. R. F. GOING
Regional Procurement Officer U. S. Treasury Dept.
222 West North Bank Drive
Chicago, Illinois

REGION VI

Alabama, Florida, Georgia, Mississippi, So. Carolina, Tennessee
MR. J. D. TOMPKINS
Regional Procurement Officer U. S. Treasury Dept.
10 Forsyth Street Building
Atlanta, Georgia

REGION VII

Arkansas, Louisiana, Oklahoma, Texas
MR. HAMILTON MORTON
Regional Procurement Officer U. S. Treasury Dept.
609 Neil P. Anderson Building
Fort Worth, Texas

REGION VIII

Iowa, Kansas, Missouri, Nebraska
MR. W. B. EDGAR
Regional Procurement Officer U. S. Treasury Dept.
6th Floor, Porter Building
Kansas City, Missouri

REGION IX

Colorado, New Mexico, Utah, Wyoming
MR. ALDEN W. POOL
Regional Procurement Officer U. S. Treasury Dept.
1630 Wazee Street
Denver, Colorado

REGION X

Arizona, California, Nevada
MR. THOS. C. STEPHENS
Regional Procurement Officer U. S. Treasury Dept.
335 Fell Street, San Francisco, California

REGION XI

Idaho, Oregon, Montana, Washington
MR. CHARLES H. PETERSON
Regional Property Officer U. S. Treasury Dept.
1623 W. Thruman St.
Seattle, Washington

the Treasury Department shall undertake such warehousing, rehabilitation, and physical distribution of supplies and equipment for Government agencies, and, in connection therewith, shall take over such Government warehouses, appurtenant facilities, and personnel used or employed by other Government agencies in the performance of these functions, together with such funds heretofore or hereafter provided therefor, as the Director of the Bureau of the Budget may approve. . . ."

The issuance of this Order resulted in the immediate establishment within the Procurement Division of the Federal Property Utilization Branch. It is of the operations of this Branch, and its intentions toward the disbursement of federal surpluses that we have been queried.

Not for Government Alone

This branch has the dual objective of redistributing surplus materials within the government on a fair and equitable basis—and sale of excess surpluses outside the government on the same basis. The word "utilization" in its title carries a significant implication: The branch intends to redistribute on the fundamental condition of *need*. Where property is most needed in the war effort is where it will go.

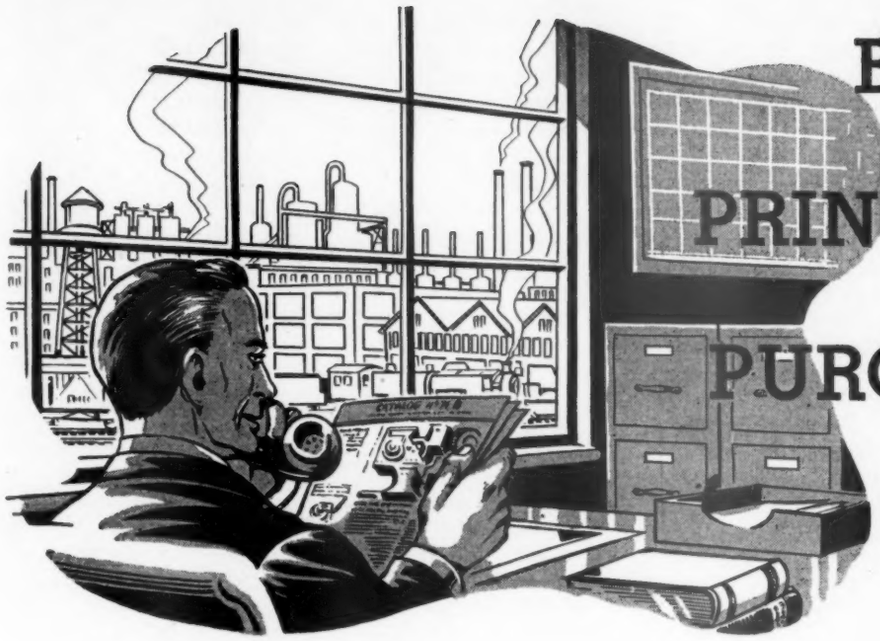
The property which this Branch has and will have as its working material comes from two sources. The campaign among government agencies to "houseclean" and declare surplus any materials not in active use is progressing rapidly, transfer activity is increasing. Secondly, the programs of liquidations which accompany the dissolution of various government instrumentalities usually provides large stocks for redistribution.

Examples of this latter source include the Civilian Conservation Corps, the Works Progress Administration and, recently, the National Youth Administration.

Each of these agencies held supplies and equipment ranging from motor trucks, metal working lathes, electrical equipment, bulldozers, tractors, hoists and sewing machines to stocks of materials such as lumber, steel, pipe and cement.

Liquidation of supplies of the former two agencies is in final stages. Much material from each was transferred to extremely vital war projects, such as the Alcan Highway, and to other materials-starved Federal needs. Property belonging to the NYA is currently in the inventory and appraisal stage, and will be disposed of under a clear-cut set of

Continued on page 264



BASIC PRINCIPLES of PURCHASING

IX. THE PURCHASE BUDGET

BUDGETING is the planned expenditure or utilization of resources. Originally the term was used only in connection with financial planning, but as the principle has been more widely applied, it is now quite properly used in connection with the expenditure of time or materials as well as of money. As a planning activity, it is distinctly an executive function. As planned spending, it has a direct and important bearing upon the purchasing program and is one of the responsibilities of the purchasing executive. The Controlled Materials Plan, devised under the necessities of a wartime economy as a means of distributing relatively fixed quantities of available materials in accordance with various needs and where the materials will do the most good, is an example of materials budgeting on a national scale.

There are two kinds of budgets. The individual's financial budget is generally based on a fixed income, and aims to distribute and to limit expenditures so as to meet various needs and desires without exceeding the known total of available funds. The governmental budget — the original meaning of the word — starts with the estimated cost of the program to be carried out, expressed in terms of appropriations for the various agencies, departments, and special projects. After that plan or budget has been adopted, it becomes the responsibility of the government (the Congress) to provide the revenue or to arrange the nancing necessary to carry out the plan. It is desirable to balance the budgeted expenditures with anticipated revenue, for of course in the long run this must be accomplished, but the adoption of the budget does not necessarily imply that this is to be done within the budget period itself. A time of national emergency such as the economic depression of the 1930's or the extraordinary military demands of the 1940's clearly precludes such a possibility. But under such circumstances, careful budgeting or planning is more than ever necessary to keep the unbalance from getting too far out of hand.

Both these types of budgets have their counterpart in the purchase budgets of business and industrial management, with the limitation that in the second case the revenues must be earned — as a result of expenditures made or incurred — to meet these expenditures and to finance the costs of any temporary unbalance.

Budget Limitations

The simplest case of a purchase budget occurs when the amount of available funds is definitely known in advance. An example of this is a department in a university. Total income from fees, endowment, state aid, etc., is known, and a specific fund or appropriation is allocated, after salaries have been provided for, to cover the operation and supplies for that department. The appropriation is made at the beginning of the year, defining both the scope and the limitation of expenditures for that purpose. Frequently the appropriation becomes available for spending only on a prorated monthly or quarterly basis, corresponding to the schedule on which funds are received, and avoiding the danger that the entire appropriation will be spent in the early months of the fiscal year so that continued operation would be impossible, or at least seriously hampered, toward the latter end of the period.

It is customary, under such a plan, to require every purchase order to go first to the comptroller or other financial officer, for certification that departmental funds are actually available, before the order is released to the vendor. It is also customary to have a monthly report showing the balance of unused funds under the appropriation, for the guidance of both the purchasing officer and the department head.

Such a system sets a definite limitation upon purchases. Besides maintaining solvency, it is an incentive for careful planning so that supplies may be kept in a workable balance to accomplish the projected program, and an incentive for careful purchasing so as to make the budgeted funds go as far as possible, thereby increasing the resources and efficiency of departmental operation. It is the testimony of governmental and university Purchasing Agents that this latter consideration is the most effective factor in enlisting the coopera-

tion of department heads in support of a centralized purchasing organization. However ruggedly individualistic they may be, and however strongly inclined to subordinate commercial details to professional standards and personal preference, they are impressed by purchasing skill which stretches the buying power of their appropriation or which, in the slogan of one municipal purchasing office, gives "greater mileage to the tax dollar." The inflexibility of such a budget is deliberate and necessary. The system has flexibility, however, in the sense that experience from year to year is an excellent guide to a more equitable or effective distribution of funds in the following period.

In industrial operations, a corresponding situation is usually encountered only in respect to special projects — the purchase of construction, machinery, or other capital equipment where a special appropriation or authority is required. Such budgeting implies (1) a careful advance estimate of costs; (2) proper financial arrangements, made in an orderly manner, and used specifically for the intended purpose; (3) standards of value and of purchasing performance; (4) no purchase or expenditure in excess of the stated requirement.

Requirements Determine Purchases

When budgeting is applied to the purchase of materials and supplies for a manufacturing program, it is obvious that greater flexibility is called for, and that the process corresponds with the type of budgeting described above. It has been repeatedly emphasized in these articles that requirements originate with the manufacturing program and are measured by that program. The rate and volume of operations are variable factors, and are not always predictable very far in advance. To view the situation realistically, a purchase budget has meaning only to the extent to which it reflects the actual operating program with reasonable accuracy, for as a matter of practical common sense no purchasing department will aim to observe the budget at the expense of the operating schedule which the budget was designed to implement. If the budget is too limited to meet the needs of the program as it develops, additional purchases are going to be made to carry it through, and sound purchasing policies will not be abandoned simply to justify an inaccurate estimate. If the budget is too liberal, the prudent Purchasing Agent will not feel himself obligated to purchase beyond the quantity for which a useful demand appears.

There are other variable factors, too, affecting purchasing policies — fluctuations in business conditions and commodity markets, economical purchasing and shipping quantities that may not coincide exactly with budgeted quantities, ranges of quality and price, and all the other elements that enter into a purchasing decision. A general price advance or decline is certainly a possibility with which every purchasing program must reckon. To some extent, the cushion of a "working inventory" will take care of such variations, but in this connection the Purchasing Agent will also consider the rate of inventory turnover and the dangers of obsolescence if budgeted quantities are exceeded.

A recent study of companies in which a purchase budget is regularly used, shows that a variation of 10% above or below the budgeted amount may be expected, and is regarded as a fairly successful performance — though 10% on any sizable purchasing program represents a lot of material and a very substantial financial commitment. As a matter of fact, slightly less than two-thirds of the budgeting companies come within this tolerance when, at the end of the budget period, the record of actual purchases is compared with the advance estimate. Some, of course, come rather close to the budgeted figures. In more than one-third of the cases, the variation is of even greater proportions. The demands of the operating program for materials and supplies, the requirements which must be procured to carry through that program, are found to exceed or to fall short of the budget estimate, and the actual need is what governs the purchase. In most cases this reflects a variation in the manufacturing schedule itself, which is not exactly predictable and must in any case be subject to adjustment for any good and sufficient reason. In some cases, as will be shown later in this article, an underestimate of requirements is deliberately made.

Why Budget?

Under these circumstances, it is logical and proper to raise the question: Why budget purchases in the first place if such deviations are likely and are permitted to occur? The companies which continue the practice in the face of such experience have not only one, but several, conclusive answers to that question.

1. The procurement of materials is capable of handling according to a plan, both in respect to quantities and timing, in the same way that the financial and manufacturing schedules are planned. The Controlled Materials Plan is a vivid example of scheduling the distribution of materials, and it is, further, a demonstration that whereas the operating schedule normally determines the purchasing schedule, there may be extraordinary circumstances when the materials schedule, organizing a fixed amount of available supplies, may determine the operating schedule. In any event, the two must be closely coordinated.

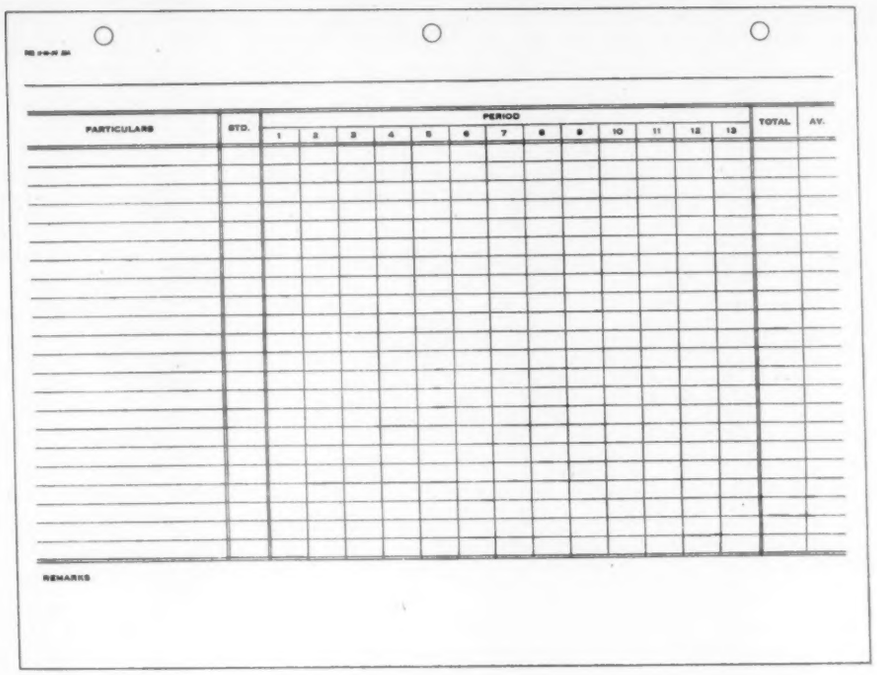
The mechanics for that planning and coordination are already at hand in the records of most business organizations — in sales estimates, manufacturing quotas, bills of material, and records of past purchases and consumption. In operations of any magnitude, a planning department is regularly maintained, and in smaller or less formal organizations the planning function or decision is a part of general management responsibility. But in relatively few cases does this plan extend to the details of purchasing, which is taken for granted as a part of the purchasing department's responsibility. The purchase budget, then, can serve to accomplish this correlation, to put together a complete overall picture of requirements from the various details already available, and provide a chart to guide the course of the purchasing executive and his department in the nature of a program rather than as a series of independent and relatively unrelated transactions. Any executive will testify that a better and more intelligent job can be done with the benefit of such a program. The detail of whether the estimate is scrupulously adhered to is of less importance than having the advantage of a goal and a plan.

2. Budgeting purchases, despite the deviations from the original plan that may prove to be necessary in the course of carrying it out, provides the most accurate and scientific guide to probable requirements in the purchasing program. In the absence of a budgeting procedure, the most commonly used basis for determining purchase quantities and timing is the record of previous purchases. Although historically accurate, such a record is at best a rough approximation of what may be required for operations in advance. The requirements of the previous year, or the previous quarter, may be quite inadequate for the manufacturing schedule that lies ahead. or those requirements

FIGURE 1

All-Purpose Budget Form

A standard form applicable to purchase budgets and records, as well as to other types of budgeting. The form illustrated contemplates the use of thirteen equal budget and accounting periods of four weeks during the year. If calendar months are used, simply omit the last column of the center section.



may have changed radically in kind as well as in volume. It is recognized that adjustments may have to be made, and it becomes a matter of judgment — another approximation — as to the direction and extent of those adjustments.

The preparation of a budget, on the other hand, makes those adjustments scientifically on the basis of known data, projected requirements, and any foreseeable elements affecting materials and supplies. It should prove far more accurate than a general estimate, and give the purchasing executive greater assurance in negotiating for his company's supplies, while at the same time it minimizes the hazards of loss through underbuying or overbuying.

Even in a continuing purchase program based on maximum and minimum stock quantities, ordering points and ordering quantities, the changing character of demand and the changing rates of operation call for adjustment of these critical factors in order to keep stocks in balance, to avoid the necessity of too frequent ordering, and to avoid loading the inventory with slow moving stocks. Adapting inventory and ordering quantities to changing conditions of demand and supply is another application of the budget principle.

3. A comprehensive materials purchasing budget, projecting commitments over a period in advance, provides a basis for adequate and orderly financial planning to meet these commitments — and the expenditure for materials and supplies constitutes one of the major items in a company's schedule of disbursements. It is customary to make such financial arrangements in respect to any special expenditures or for capital accounts, such as new construction or equipment. These are regarded as large purchases, yet in many companies there may be a dozen items of materials or supplies on the regular purchase list which, in the course of repeat orders over a period of several months or a year will add up to even greater amounts.

An analysis of the figures in the U. S. Census of Manufactures indicates that, on the average, expenditures for materials and supplies represent 58% of the "manufacturing dollar". The financial budget is generally regarded as an essential instrument of management. It is obvious that a financial budget in which one of the largest single items is not projected with all possible care can scarcely lay claim to any great accuracy or authority on its own account. General approximations are of little value.

Responsibility for Estimates

4. One of the features of budget practice is that the estimate not only represents the considered judgment of the several officers or department heads who have a share in its compilation and approval, but it becomes a matter of record. It follows that there is a pretty definite allocation of responsibility for the various opinions and judgments that are incorporated in the budget figures. From the standpoint of practical management, there is little profit in "pinning the blame" on this or that department for any serious inaccuracies that may develop. But it is highly important to know where and how those inaccuracies have originated in order to prevent a recurrence of the error.

For example, if a large quantity of some item turns up as surplus, tying up a substantial amount of working capital or representing actual inventory loss, it may be due to a variety of causes. It might be a case of over-ambitious forward buying by the Purchasing Agent, or an over-optimistic estimate of poential sales, or a change in engineering design or specifications made without due notice or without consideration for materials already on hand or contracted for, or a faulty bill of materials, or an error in requisition, or the desire of some operating man to have "plenty on hand", or an entirely unpredictable and unavoidable cancellation. The purchase budget holds the answer. More important, in respect to most of these possibilities, a properly drawn purchase budget would have operated to prevent the occurrence by setting a limit upon forward commitments, requiring an accurate estimate of manufacturing activities and correlating purchase quantities with this figure, and calling for notice of change in specifications or schedule. The purchasing department, habitually cast in the role of scapegoat for any such irregularities on materials and inventory, should welcome a plan that promises to set up and regularize the buying program in relation to the entire company operation, and that makes such an assignment of responsibility.

So far as the Purchasing Agent's own initiative and freedom of action is concerned, when operating under a purchase budget, the effect is toward flexibility and liberalization of authority and judgment, rather than being a limitation. While it is true that a nominal limitation does exist, it is only the limit set by the manufacturing program, which would exist in any case and which could not be exceeded in any prudent purchasing operation. Overbuying is one of the most serious, and at the same time one of the most prevalent faults in industrial procurement. Rather, the budget

should be viewed as an authorization to buy, which sets up the widest possible scope for purchasing skill on the basis of the total requirement for the budget period.

The most ardent advocates of budgeting do not claim that it is the preventive and cure for all evils, but it is of great assistance in defining the problem and in holding a company and its various departments to the charted course.

Standards of Performance

5. A budgeted estimate of materials and supplies to be purchased sets a standard for efficient performance that encourages even greater efficiency and discourages carelessness and waste in the use of materials. Savings show up quickly and dramatically when balanced against the budgeted estimate, while extravagance and inefficiency are just as apparent on the demerit side.

"More product from less material" is a popular war-born slogan. The materials budget is predicated on getting a certain number of parts or pieces, for example, from a sheet or strip of metal. If a more economical template layout can be devised, or a narrower strip utilized for the same result, budgeted performance is exceeded in a way that cannot escape recognition. Or a stated percentage of spoilage and rejects in a finishing operation is considered good normal performance. A materials budget will not in itself improve that performance, but it provides a strong incentive not to exceed this allowance and to cut it down if possible.

One field in which the effects have been particularly advantageous is in departmental budgets for small tools and operating supplies. Obviously no budget of this sort is going to be so finely drawn or arbitrary as to set a limit on the supplies and equipment needed to get out the work. But once again, a standard is set, against which the department head knows that his actual performance will be measured. There are cases on record where a lively competition has been engendered among foremen in respect to efficient and economical use of their working supplies and surprising savings have resulted. And while every budget must be at least adequate to the need, there will be few foremen and superintendents willing to go on record in their original budget estimates and requests as needing proportionately more to work with than their colleagues in the next department.

6. Just as the materials budget sets a standard for operating performance on the quantitative basis, when it is translated into a purchase budget it sets a standard for purchasing performance. It calls for estimated quantities to be bought at estimated prices. As previously suggested, a sharp and sudden fluctuation in prices may throw the entire calculation out of balance, and the buyer may be quite powerless to do anything about it. But in regard to normal and seasonal fluctuations and general price trends, it is a part of the Purchasing Agent's job to foresee such probable changes and to plan his buying program accordingly. A common measure of purchasing effectiveness is to chart actual purchases and prices of major materials against the market chart for those materials, indicating how actual costs compare with current prices at the time of use, or replacement cost. The actual cost or expenditure is what counts.

Meanwhile, however, the company's cost and sales departments must have a basis for their calculations in regard to the product. Recognized accounting practice provides for this by setting standard unit costs for materials. This figure is of course subject to adjustment as costs move up or down, and to get a true financial balance any variation between standard and actual costs must be adjusted just as actual costs are the final factor in the purchasing account. But in nearly half the companies using this method, materials for regular production programs are charged out to the manufacturing departments at standard unit cost. (Materials for special orders are customarily charged out at actual cost, and such projects are subject to special estimates and pricing.) Consequently for profitable company operation, from purchase through fabrication and sale, it is essential that the relation of actual cost to standard cost be favorable. In some respects

RAW MATERIAL

ITEM	Previous Year's Consumption	___ Months Consumption	Previous Month's Consumption	Inventory	Due on Contract	Due on Orders	Total on Hand and Bal. due from Sup.	Est. Mos. Sup. '41	Est. Mos. Sup. '42	Purchases Authorized
Serving Cotton										
Tram Silk										
Copper rod										
Oil, pounds										
Gum, pounds										
Wire enamels										
Straits tin										
Lead										
Smoked sheets										
Asbestos										
Glazed cotton										
Soft cotton										
Battery Terminals										
Copper rolls										
Lacquer										

★

FIGURE 2

Raw Materials Budget

This form summarizes basic data on fifteen key commodities in the purchasing schedule of an electrical manufacturer, used to determine the budget of authorized purchases from month to month.

this is a more important ratio than the comparison of cost to current market. The purchase budget sets up a standard for this comparison and for purchasing performance to achieve this end.

Incentives and Control

7. At the same time, besides setting up standard unit costs for accounting and estimating purposes, this budgeted projection of quantities and prices furnishes an incentive for the purchasing department to improve upon that normal performance, just as in the case of the operating departments discussed in a previous section. And it enables the purchasing department to cooperate most constructively and intelligently with general management to the end of profitable company operation. Business, even when most meticulously planned, deals with variables. The matter of price fluctuations and of cost adjustments has already been mentioned. There may be other variations of both the quantitative and price factors, imposed upon the purchasing program by outside developments or indicated as the part of good buying practice. If these variations are foreseen, as they most naturally would be in the purchasing operation, there is an opportunity to get executive authorization for revision of estimates that will affect the entire company's plans.

It should be emphasized that such revisions are not merely "for the record" or to establish superior buying performance. They are an integral part of the whole budget plan, designed for company advantage. If an upward revision of standard unit costs is indicated, or an expansion of inventory investment in anticipation of rising costs, it not merely safeguards the purchasing records, but protects the profit position of the company before the critical situation actually develops. If a downward cost revision is indicated, it places the company in a more favorable competitive position, which may be even more important, and may pave the way to a greater volume of operations.

8. Finally, the purchase budget provides an effective means for inventory control, both in respect to quantities and overall investment. The common device of setting maximum and minimum stock quantities on all items, while simple, practical and workable, has shortcomings as a positive mechanism of control. Since it is exceedingly unlikely that all items will be at the maximum or minimum at the same time, there is no assurance of a balanced inventory. Total investment may vary within wide limits, and may represent an excessive amount of tied-up capital if an unusual proportion of the items happen to be at or near the maximum. An item may be well within the stated maximum quantity, yet may be very slow moving or actually obsolete.

This does not mean that the maximum/minimum arrangement is without value. It is the most practicable method yet devised for setting ordering points, bringing stock requirements to the attention of the buyer, and assuring a steady supply. Combined with a budgeted program of material requirements and purchases, its effectiveness may be greatly increased and many of the shortcomings noted above may be avoided. Budget procedure has been particularly valuable in detecting obsolete and slow moving materials and prompting action in respect to them, with the result that inventories become more fluid and economical.

Types of Purchase Budgets

On the basis of these reasons for budgeting materials and purchases, the first question of procedure concerns the particular types of materials which can be

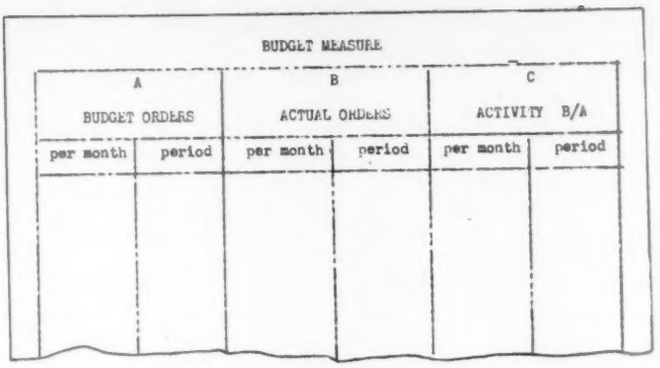


FIGURE 3
Budget Measure
The comparison of budget vs. actual performance is an essential part of any budget plan.

so handled without getting into excessively minute detail. Four groups suggest themselves as most adapted to budgeting. The principle may be applied to any one individually, or to all four in a more comprehensive budgeting program.

(a) The principal raw materials used by the company. In many cases it will be found that a dozen or so materials represent the bulk of the manufacturing requirements, and that a correspondingly limited number of supplies such as fuel, carbon electrodes, packaging materials or shipping containers, for example, round out the major responsibilities of the purchasing program, in both volume and expenditure. If adequate attention is given to this group, and a good purchase record compiled in respect to these materials, the company's interests will be well served. While it is undeniably true that careful attention to even minor materials is highly to be desired, and often results in surprisingly large savings, it is frequently impracticable to devote the same amount of time and care to all, and those items of the first importance must be given preference.

When such a budget plan is in operation, reaching only a part of the purchase list, there is a strong likelihood that the secondary materials will be kept in reasonable balance and control by the program dictated in regard to the major materials, just as in the Controlled Materials Plan affecting the entire national economy a strict control of relatively few critical materials tends to balance the use of the entire materials list.

(b) An overall figure to cover total requirements, in volume and expenditure, allocated proportionately to various classifications of materials but not necessarily involving detailed budget estimates of particular items. This is more of a generalization, but offers control and balance of the purchasing and materials program while still leaving a considerable degree of flexibility to cope with variations in requirements as the production schedule develops, and for the exercise of purchasing judgment.

(c) Departmental operating supplies. This is a partial and specialized application of the plan outlined immediately above, specifically covering an important item of indirect expense. It is especially important because this type of expenditure is difficult to incorporate in a bill of materials or otherwise relate to the costs of materials actually entering into the product, and is subject to dissipation through waste or extravagance unless some means of control is imposed.

The purchase budget for departmental supplies offers such a means of control, computed on the basis of

the operating rate, or as a fixed proportion of output, or on the number of man-hours worked over the budget period. As previously mentioned, it not merely sets a standard of performance, but provides an incentive for bettering that record. It is equally well adapted to the control of supplies for office departments, including the operation of the purchasing department itself, in respect to the supplies consumed.

(d) Special projects and special orders. This is the simplest type of materials budget in manufacturing operations, and is quite generally employed, though not always dignified with the name of budgetary procedure. Costs are usually figured in detail for such work, quantities are denfiitely known, and oftentimes a special appropriation is made for the work. In such cases, the procedure differs from budgeting a continuing production program in that the budget covers the project or job as a unit, rather than covering a period of time.

Basic Data

The purchase budget starts with a quantitative measure or estimate of requirements. There are a number of known factors, available from company records, that are useful in this first stage. The most direct correlation, since materials requirements stem from the manufacturing program, is the schedule of operations as projected by the planning department. which gives a positive and accurate measure of the materials and supplies required to carry out that program for a month or a quarter or a season in advance, or for whatever period the scheduling is done. Schedules are of course subject to adjustment and change, and the purchase budget will necessarily be adjusted upwards or downwards in accordance with these changes, but at any given time the materials requirements and the projected schedule should logically be in balance.

The schedule of operations, in turn, may be predicated on the volume of orders actually received, which is a known quantity from day to day and from month to month. Or, to go back one step farther, with greater opportunity for foresight regarding the program as a whole, though without the definite assurance that actual orders afford, is the forecast of sales or the quotas established by the sales department. In the present advanced state of marketing science, such a forecast is likely to be a fairly accurate approximation. In any event, it is the basis for production schedules and consequently for materials requirements. Where products are manufactured wholly or in part for stock, or finished goods inventories, any slight deviation of sales estimates from actual sales volume is relatively unimportant and will not affect the materials schedules. It should be kept in mind that most manufacturing operations are a continuing process, and do not come to a termination and fresh start with each new budget period but carry over in smooth sequence. This means that there is an effective cushioning factor for schedules of both production and materials.

Approaching the matter from another angle, we have the information on past purchases, reflecting past requirements, that appears in the records of every purchasing department. In the absence of formal budgeting of materials, or where this responsibility is left to the judgment of the Purchasing Agent himself, this record is commonly the basis of a purchasing program. It is really useful only when the purchase record embraces also a record of withdrawals and consumption, which, rather than purchases alone, represent the volume of requirements. That information is not always included in a purchase record. Stores operations and inventory records may not come within the jurisdiction of the purchasing department, but may be under the manufacturing division or handled as a separate department. Without that information, any errors in purchasing judgment might be repeated, or changed conditions not taken into proper consideration, which is exactly what a purchasing budget seeks to avoid.

There is a further limitation in that dependence upon the purchase record is a glance backward instead of forward. The fine rhetorical principle, "I know no way of judging the future except by the past," must be seriously modified in its application to business, which must meet constantly changing conditions. This emphasizes also the fact that budgeting is not a responsibility of any one department, but must be a cooperative procedure, representing all divisions of management, if it is to be an effective guide.

A Committee Project

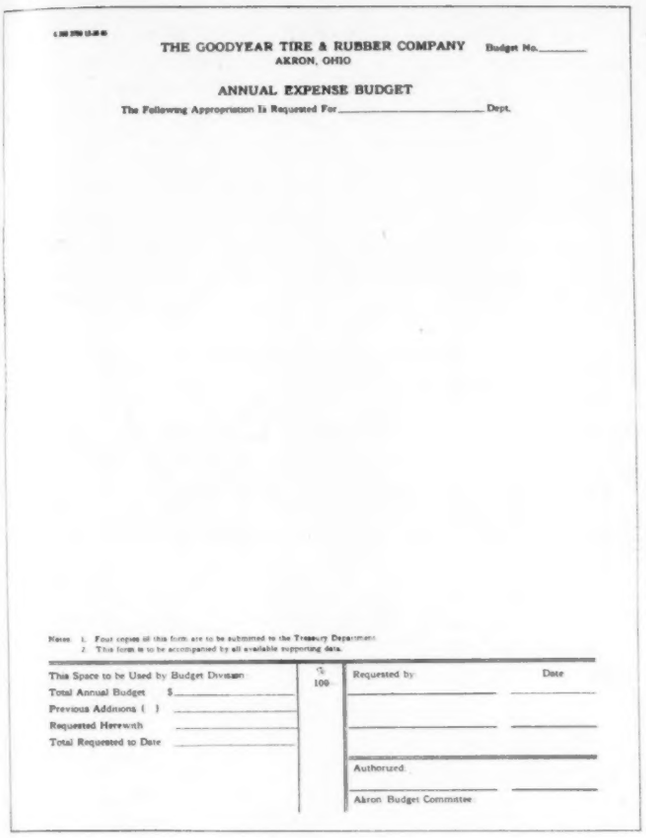
Even when there is a special budget officer in the company organization, the preparation of the materials or purchase budget is a committee function. There should be representation on this committee for production, planning, purchasing, and financial (either comptroller's or treasurer's) departments. Where no special planning department exists, the sales department should be represented, and in some organizations general management rather than the strictly financial interests are brought in. The committee has access to all the various sources of pertinent data enumerated above.

This committee determines the period for which advance planning is practicable, and the intervals at which the plans are to be reviewed and adjusted. It does not have the responsibility of determining the rate or volume of operations, but it is essential that this factor be definitely known, and on the basis of this information it determines *the program upon which the purchasing budget shall be based.* This will necessarily coincide exactly with the projected activity in the case of a special project, but it may be either higher or lower than that estimate on a continuing operation, depending on conditions, outlook and policy, relying on later adjustments to keep the program in balance over a longer period. It also receives the estimates and requests of the various department heads for equipment and supplies.

On the basis of these determinations, the requirements of the company operation are translated into terms of materials — either according to a strict bill of materials or in proportion to the overall program, or by a combination of both methods — properly allocated as to specific materials, material classifications, and utilization distributed to the various departments concerned. The quantitative measure is translated into terms of estimated cost. The resulting determination, duly approved in committee, constitutes the purchase budget. It is both an authorization and a limitation. To exceed it, either in the purchase or issuance of goods, requires further approval by the committee. Usually the necessity for such special approval is forestalled by periodic revisions which take into consideration any changes or new requirements.

The Budget Period

As a general rule, the budget period coincides with the period for which the production planning department establishes schedules in advance It must be



THE GOODYEAR TIRE & RUBBER COMPANY Budget No._____
AKRON, OHIO

ANNUAL EXPENSE BUDGET

The Following Appropriation Is Requested For_____ Dept.

Notes: 1. Four copies of this form are to be submitted to the Treasury Department.
2. This form is to be accompanied by all available supporting data.

This Space to be Used by Budget Division
Total Annual Budget $_____
Previous Additions ( )
Requested Herewith
Total Requested to Date

%
100

Requested by Date

Authorized

Akron Budget Committee

FIGURE 4

Request for Appropriation

Departmental expense budgets are customarily set on an annual basis, the department head estimating administrative costs in advance and requesting an appropriation covering the detailed forecast.

projected sufficiently far ahead to permit the purchasing department to find suppliers, negotiate, and get delivery, this procurement cycle ranging all the way from a few days on common materials in times of normal supply to weeks or months in the case of special and complicated purchases or critical items in times when materials are scarce and mill capacity booked well ahead. It must also cover a sufficient period for the exercise of purchasing judgment in setting economical purchase quantities, utilizing maximum purchasing power, timing the purchase program, and correlating it to current business conditions.

The most commonly used purchase budget period is three months, revised on a monthly basis and extended another thirty days at the time of each revision, so that the Purchasing Agent at all times has the authorization and the flexibility of considering a three months' supply in working out his program. In some industries it is practicable to project an entire season's operations — as in the case of annual models, seasonal and style merchandise, or "lines" which are habitually offered to customers several months in advance of manufacture and delivery — these schedules being also subject to monthly revision as actual demand develops and variations from the basic estimate become apparent.

In industrial materials budgeting practice, an exception to the normal budget period is generally made for standard materials that can be most advantageously purchased on an annual contract basis, and standard supplies such as fuel on which a similar arrangement is practicable and desirable. Departmental operating supplies, on which no substantial variations are anticipated, are likewise budgeted on an annual basis in most companies.

Authorization to Buy

Reference has been made to the dual purpose of budgeting purchases, as a limitation on expenditures without special approval, and as an authorization to buy. The two go hand in hand. From the constructive viewpoint, the latter is perhaps the more important angle. An example of its application is shown in the accompanying form, Figure 2. This is used by a manufacturer of electrical wire, who follows the practice of budgeting, monthly, its purchases of fifteen major items, the key materials for its manufacturing process. The budget committee, known in this case as the purchasing committee, consists of the Board Chairman, the President of the company (who is also the Sales Manager and happens to have come to his present position from the Purchasing Agent's desk), the Vice President in charge of Manufacturing, the Comptroller, and the Purchasing Agent.

The form is a simple mimeographed sheet, with ten columns opposite the listing of each of the items. The consumption of each item during the previous calendar year is entered in the first column. On the first of each month, the Purchasing Agent enters in the third column the amount consumed during the month just past, and in the second column a cumulative total of the current year to date. The three figures provide a quick factual picture of the trends in use and requirements. The next four columns present the facts in regard to supply — inventory, due on contracts, due on orders, and the total of material on hand and balances due from suppliers. In the eighth and ninth columns, this quantitative report of supply is translated into terms of time coverage — the number of months' supply on the basis of the known consumption of the previous year, and on the basis of current rate of consumption projected for the year. In this way the numerical statistics are adjusted for changes and trends, and the comparison set forth in these two adjoining columns shows graphically the direction and extent of the change in requirements.

The last column, which is determined and filled in at the budget meeting, is headed "Purchases Authorized". On the basis of the known data, management policy as represented by the Board Chairman, the sales estimate of the Sales Manager, operating needs as outlined by the Manufacturing Vice President, financial position as presented by the Comptroller, and purchase recommendations made by the Purchasing Agent, the forward buying policy in regard to each of the fifteen items is agreed upon and a definite authorization as to the quantity of each to be purchased becomes a matter of record, serving as the purchase budget for the next thirty days, when the entire situation again comes up for review with the additional experience of the month added to the basic data.

A Safety Factor

Another system of authorization is employed by other companies. After the total material requirements have been determined from the manufacturing schedule for the ensuing three months, the Purchasing Agent is authorized to procure up to 75% of those amounts at his own discretion. Thus the bulk of the purchase program is immediately provided for, with slightly more than a sixty-day leeway for flexibility in buying and coverage if desirable. At the same time, there is protection

against overbuying and provision for a drastic curtailment of the quarter's requirements if conditions should radically change, so that inventory hazards are kept to a minimum. If, in the judgment of the Purchasing Agent, it should be desirable to purchase up to the full amount of estimated requirements, or even beyond the budgeted three-month period, special authorization is required, and the recommendation comes up before the budget committee. At this time, any factors which might modify the Purchasing Agent's recommendation are considered. Purchasing up to the entire projected requirement becomes a responsibility of the whole committee, rather than a matter of individual opinion.

At the end of the month, the materials situation again comes up for review. The requirements for three months ahead are recalculated on a current basis; actual consumption for the previous month is deducted and the estimated need for and additional month forward is added. The supply position takes into consideration any advance purchases made in excess of the month's actual need and within the 75% limitation. On the basis of the adjusted figure, a new 75% authorization is granted and the budgeted purchase program continues, always retaining a 25% margin of safety without prejudicing foresight and good purchasing practice.

Adherence to Budget

The setting of any standard, such as that established in a purchase budget, implies that actual performance will be compared with the theoretical standard. Budgeting would have little meaning or value unless such a comparison were made, though, as pointed out at the beginning of this article, strict adherence to budgeted amounts is not the measure of the value of budgeting. Some variation is expected, and more often than not the variation is an indication of better buying or of better performance than might be the case if the estimate and the actual purchases balanced to the pound and to the penny. As a matter of fact, since the purchasing program will basically be determined by actual requirements, the comparison might be more accurately considered as a test of the estimate than of the purchasing operation. This is important because the more accurate the forecast and budget can be made, the better will be the planning of company operations as a whole, and all departments will have a more realistic goal at which to direct their efforts.

The mechanics are simple. Budgeted amounts and actual amounts ordered are set side by side in parallel columns, in each budget classification. This provides a direct comparison. If desired, for convenience, a ratio of budget to actual performance can be worked out and mathematically expressed in an adjoining column. Variations can be explained, giving credit where credit is due for superior performance beyond the expected standard, or pointing out where unforeseen factors or changing conditions were responsible for the deviation. In any case, after a period of experience and comparison with figures of this sort, better forecasts may be expected though it is improbable that 100% accuracy will be consistently achieved so long as business deals in variables and encounters unpredictable changes.

The forms incident to budget procedure in the average industrial concern are likewise simple. In the large organization, with many departments and strict control, it may be desirable to have a printed "Request for budget appropriation" and, in the case of institutions and governmental departments with fixed appropriations, a printed monthly report of commitments and unexpended balance on each budgeted account. For the most part, however, the forms in use are mimeographed sheets punched for a standard loose-leaf binder, since the records are strictly for internal company use and are used in small quantity — a few copies required only twelve times a year.

Since the principles of all budgeting are simple and uniform, whether for the control of purchases or some other factor, a standard "all-purpose" budget form has been developed. It provides for a heading, a list of items to be covered, the standard unit quantity for each, and either twelve or thirteen parallel columns to show actual performance in succeeding budget periods throughout the year, depending on whether the calendar months or thirteen four-week accounting periods are used. Two additional columns at the right are used to show the actual total for the year and the monthly average to be compared with the estimated standard.

Departmental Budgets

In conclusion, mention should be made of the departmental operating budget which applies to the purchasing department as well as to other administrative departments of the company. This is customarily calculated for the entire year in advance. In the majority of companies, each department head makes out his own estimate, preparing the budget from previous experience and from his knowledge of the work to be done. The volume of operations, and the complexity of added responsibilities such as priorities divisions, expediting, and governmental reports are taken into consideration both as affecting the personnel required, records to be maintained, and operations to be performed. It is primarily an accounting control rather than a means of planning the departmental program. Sometimes it requires the approval of financial officers, but in most cases this is a routine requirement.

The simplest departmental budget may cover the three factors of salaries, expenses, and supplies. It may be broken down into more detailed classifications such as rent, light, heat and power, postage, telephone and telegraph, printing and stationery, travel, entertainment, furniture and equipment, insurance, etc. In some cases a distinction is made between the fixed or noncontrollable expenses over which the department head has no control, such as various tax items, insurance, depreciation on equipment, etc., and variable or controllable expenses on which administrative care and skill can be exerted. And in some cases there is a further distinction made by setting definite limits on certain items such as entertainment, subscriptions, and membership dues, whereas such items as travel, postage, telephone, stationery, and the like are more flexible since the job to be done will determine the amounts necessary, just as the manufacturing program ultimately determines the purchase budget itself.

Departmental budgets are in more common use than materials budgets, and close adherence to budgeted amounts is more often to be found.

Next Month: Ethics of Purchasing

FEDERAL SPECIFICATIONS

Government buying methods show the way for exact definition of quality and maintenance of uniform standards in purchased materials

By

NORMAN F. HARRIMAN

Technical Assistant to the Director
Procurement Division
U. S. Treasury Department

THE various activities of the Federal Government — departments, bureaus, agencies and independent establishments—are in the aggregate the largest purchasers of materials, supplies and equipment in the world, both as to variety of articles purchased and total money value. These purchases are not only for the usual needs of the Government departments and establishments but also include special purchases for Lend-Lease, Emergency Relief, Strategic and Critical Materials, the Red Cross. These purchases are covered by individual specification and do not include such specialized expenditures as for ships, buildings, military equipment, etc., which are covered by group specifications issued by the activity concerned.

Before the passage of the Budget and Accounting Act in 1921, each department and establishment issued its own specifications and there was such a multiplicity of specifications for a given article that it was deemed advisable to attempt to standardize, interdepartmentally, the preparation of Federal Specifications. These individual department specifications had been developed through the years, and many of them bore the impress of individual notions and whims of the writers, so that there was a splendid opportunity to standardize these specifications. The peculiar requirements of certain of these specifications meant departures from commercial practice, necessitating special fabrication, which always involves increased cost.

In an attempt to correct these deficiencies, and to put Government purchasing on a more business-like basis, the Director of the Bureau of the Budget established the Federal Specifications Board in the Fall of 1921. This Board, together with several other activities of the Federal Government was abolished by Order of the Executive Director of the National Emergency Council, dated January 10, 1935, and in lieu thereof there was established a Federal Specifications Executive Committee by Circular Letter No. 106, dated July 16, 1935, issued by the Director of Procurement of the Treasury Department, under whose authority Federal Specifications are now prepared and promul-

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N. F. Harriman is a graduate chemical engineer, a member of the American Society of Mechanical Engineers and the American Society for Testing Materials. For twenty years he served as Engineer of Tests for the Union Pacific Railroad. From 1921 to 1928 he was Vice Chairman of the Federal Specifications Board; from 1928 to 1931 Assistant to the Chief Coordinator, Bureau of the Budget; from 1931 to date Vice Chairman of the Federal Specifications Executive Committee. He has been Technical Assistant to the Director of Procurement, Treasury Department, since 1935.

gated. The membership of the Federal Specifications Executive Committee is composed of Dr. Lyman J. Briggs, Director of the National Bureau of Standards, Chairman, Mr. N. F. Harriman, Technical Assistant to the Director of Procurement, Treasury Department, Vice Chairman, together with Technical Liaisons from the Navy Department, War Department, the Department of Agriculture, the Post Office Department, and the Veterans Administration. This Executive Committee has been superseded by the several Technical Liaisons who have been officially designated by the heads of the respective departments on the request of the Director of Procurement to collaborate with him in connection with the preparation of Federal Specifications. During the early years of this work, interdepartmental technical committees were formed, and these have continued until the present time.

Purpose of Specifications

A discussion of the general subject of specifications—what they are intended to include as well as exclude, their economic purpose, etc. seems advisable.

The basic foundation of industry is materials, and within recent years the enormous development of industry has resulted in a corresponding increase in the number of types, grades, sizes, etc., of material, supplies, and equipment, which are produced to meet modern desires or needs, and greater demands are being made upon them than ever before. Purchaser and user are continually calling for lower prices and greater efficiency of these articles; therefore the importance of specifications is obvious.

A purchase specification is a carefully drawn description covering the characteristics of a material, some supply article, or a piece of equipment, and should cover all of the points of variation which it is desirable to consider at the time the standard is adopted.

Such specifications are of especial importance from the standpoint of the purchaser, seller, and user of commodities, inasmuch as the best and most economical way to get the desired quality of an article is by the use of proper and adequate specifications. Specifications should always be subject to revision, so that they will conform to advances in the arts of production or to changes in the requirements of the user.

The object of a purchase specification is to inform the seller as to what the purchaser wants and what he does not want; that is, to define desired quality, with proper tolerances. Quality, in the sense here used, is that characteristic, or combination of characteristics, which makes a product suitable for a given use. In other words, a product is not simply "good"; it is good for a particular purpose, and in defining the quality of an article, the intended use of that article should be kept in mind.

Defining Quality

The quality of a commodity, then, depends upon a number of related characteristics, such as design, dimensions, composition, strength, workmanship, finish, adjustment, performance, etc. Some of these characteristics are capable of measurement and numerical expression while others are not. The descriptions of the dominant qualities should be definite and concise, so that they will be understood just what the product is intended to be.

It is a basic principle of purchasing that competition reacts to the benefit of the purchaser. If competition is to be secured and maintained there must be a clear statement of requirements in a specification, so that bids may be made intelligently and under uniform conditions for all bidders. Without purchase specifications the reputable bidder is not only at the mercy of the unscrupulous one, but the purchaser is deprived of the legitimate economy resulting from this method of purchasing.

To set the standard of a specification too low results in losses and low efficiency; to set it too high may make the cost excessive. The article must be strictly suitable for the purpose intended, due consideration being given to its net utility.

That quality of products is fundamental has been conclusively demonstrated. Test one by one the elements of satisfaction in a purchase and it will be found that prices, terms, and conditions of delivery, lose their appeal if quality is not as agreed upon, either orally or written in a specification.

Specifications should be written to cover commercial products, as far as practicable. A special product is expensive and often unnecessary. One of the most important things to guard against in the formation of a purchase specification is the tendency to include characteristics that are not essential to the uses to which the article will be put.

A properly drawn specification is a high order of work and its formulation requires the services of the technologist and engineer for the technical details, the Purchasing Agent for commercial details, and the lawyer for the legal details, which is very important, as a specification is a part of a contract, either directly or by citation. The chemist and engineer should be consulted for the test and inspection methods, and, in addition, the views of the practical user of the material should be considered.

Importance of Tests

Specifications should include the methods to be used for determining whether the specified characteristics, such as chemical composition, physical properties, dimensions, finish, etc., have been complied with.

Much time and painstaking care are required to formulate a purchase specification that will stand the test of use. If improperly drawn, protests are invariably received, not only from the using departments, but also from manufacturers.

It is a well known fact that almost all commodities vary in quality; that is, there are "seconds". It is, therefore, inevitable that some purchasers will receive sub-grade articles, unless there is adequate inspection and test. To expect any other result is to disregard the lessons of experience. Granting reliability and good intentions of the manufacturer or seller, errors occasionally are made in manufacturing and in delivery. The use of a specification provides no assurance that commodities of the specified grade will be furnished. Adequate specifications show that the purchaser knows what material he wants, and adequate inspection and test insures that the specified grade of article will be furnished.

Utility and Price

One of the most difficult problems of purchasing without specifications in the Government service, as well as in the commercial world, is the evaluation of quality and price among bidders, for a given article. This situation is cleared by the use of proper and adequate specifications. Purchasing by bids which are based upon well formulated specifications really sets an upper and lower limit to the range of this evaluation. The article that is too good is eliminated in the price comparison of bids; the article that is too poor in quality is eliminated by the minimum quality set by the specification.

Prices paid for commodities, and inspection and laboratory reception

tests, may indicate that an article has the characteristics and qualities that apparently make it worth the price for the purpose intended; service, however, may develop weaknesses, flaws or defects, which render it valueless for the purpose intended. It is to provide for such cases that the "utility factor" or "work value" method of purchase and testing has been developed. The problem is to select the important variable factors entering into the service of a given material or device under usual conditions of use, and to reduce the factors to a simple formula, in conjunction with an easily duplicated test, which will simulate, in a shop or laboratory, actual service conditions.

The economic utility of a commodity, or its utilization value for a particular purpose, obviously is dependent upon its kind or type and the use for which it is intended, and the real *cost* of an article to the user is the *price* of that article divided by the *service* it will render. It is the business of the buyer or user to determine, if possible, the cost as well as the price of an article. This usually involves both economic and technical knowledge.

Performance Specifications

The purchase of material, supplies, and equipment, on performance specifications based upon work values or utility factors, in lieu of detailed characteristic specifications, is now tending more and more to replace specifications which define chemical composition, physical properties, construction details, methods of manufacture, etc.

A specification based upon performance not only gives the manufacturer full latitude to obtain the result desired by any method within his means or facilities, but also, when modified in the manner described, tends to reward the manufacturer who obtains the desired result at the lowest cost to the buyer.

The Government as a large buyer is particularly interested in the performance or utility of an article in service, and emphasis is therefore placed on specifying performance, where that method is possible, rather than physical properties, chemical composition, or method of manufacture, which frequently are related but indirectly to service requirements.

Purchase on a work-factor or utility basis insures a minimum cost per unit of service, whether it be miles for an automobile tire, weight of metal removed per minute for a tool steel, or the life of an incandescent electric lamp. Utility is the criterion by which material or device should be judged as to its value, and utility is measured by the strict economic test of how much satisfactory service is received from it per dollar expended.

At the present time, several Federal Specifications are formulated on this basis. For example, incandescent electric lamps, dry cells, hacksaw blades, typewriter ribbons, carbon paper, etc. Lubricating oils are now being procured by most of the departments on a similar basis, under the Navy contracts. It is believed that the utility basis of specifications is the ideal to be striven for, and as many of the Federal Specifications as possible are so formulated.

In any event, the specification writer should, as far as possible, either specify results desired and leave methods of production and properties to the manufacturer, or he should specify methods of production and properties desired, and assume the responsibility for results in service.

Use Is Increasing

The United States Government probably buys a larger proportion of its material, supplies, and equipment to specifications than any other organization in the world. The various departments and establishments have about 11,000 specifications, the Navy and War Departments alone have about 5,500. Of course many of these specifications may never be considered as Federal Specifications, as they are used by one department alone, or they cover military articles. Up to the present time (August 1, 1943) 1512 Federal Specifications have been promulgated by the Director of Procurement, covering the more important commodities. To date (August 1, 1943) 442 Emergency Alternate Federal Specifications have been is-

(*Continued on page* 266)

TECHNICAL COMMITTEES
Currently at work in the formulation of FEDERAL SPECIFICATIONS

Abrasives and Polishing Materials
Acoustical Correction Materials
Appliances
Ball and Roller Bearings
Beds and Bunks
Brake Linings
Brick and Building Tile
Brushes and Brooms
Cement, Lime, and Plaster
Chemical Products
Color
Cordage
Cordage
Detergents
Drafting Equipment and Supplies
Electrical Supplies
Feeds and Forage
Fire Alarm Systems
Fire Extinguishers, Hand
Fire Extinguishing Liquid
Floor Coverings (non-textile)
Floor Treatments
Foundry Apparatus and Supplies
Furniture (Office)
Furniture (Household)
Gages, Dimensional
Gages, Pressure and Vacuum
Glassware, Chinaware, Stoneware
Hair for Mattresses
Hand Tools
Hardware, Builders' and Miscellaneous
Heat Insulating Materials
Inks, Typwriter Ribbons and Carbon
Insecticides
Laundry Equipment
Leather and Leather Products
Lubricants and Liquid Fuels
Lumber
Machine Screws, Bolts, and Nuts
Medical and Surgical Supplies
Metals
Motor Vehicles
Office Supplies
Packing and Gasket Materials
Paints and Varnishes
Paper and Paper Products
Photographic Supplies
Pipe and Pipe Fittings
Plastics, Organic
Plumbing Fixtures
Provisions
Refractory Materials
Refrigerators
Road and Paving Materials
Roofing, Bituminous
Rubber Products
Safes, Burglar Resisting
Safes, Fire and Petty Larceny
Safety Equipment
Safety Walkways
Shipping Containers
Stitches, Seams, and Stitching
Storage Batteries and Dry Cells
Surveying Instruments
Tableware and Kitchen Utensils
Tents and Tent Accessories
Textiles
Thermometers
Wearing Apparel
Weighing and Measuring Devices
Wire Rope
Wire Screens and Wire Cloth
Wood Preservatives

Let's Keep Negotiation

By

JAMES MacPHERSON

California Arabian Standard Oil Co.

Mr. MacPherson writes with the authority of long and able service in industrial buying, plus a year of intimate association with government methods in the Purchase Division of WPB and working with Mr. Mack in purchasing Lend-Lease materials.

★

MR. Clifton E. Mack's provocative article in the May issue of PURCHASING on the subject of "Federal Procurement Policies in the Post War Era" is, in my opinion, a distinguished presentation of a most important Government problem: "How Will Government purchasing be conducted in the future?" Direct war purchases by the Government today amount to almost one-half of the entire national income. Congress has just passed an additional astronomical appropriation of 71 billion dollars for the War Department. We are buying vast quantities of every conceivable commodity made by man. Money is being spent at a daily rate so enormous that the mind fails to grasp the full import of the bill. We are literally shoveling billions of dollars into the maw of American war manufacture, and we are doing it in a manner which three years ago was against the law!

Negotiation Saves the Day

The impact of war exploded us out of a lethargy of eighty years, and forced an immediate revision of the Federal purchasing system. Mr. Donald M. Nelson, convinced that, given orders, American industry would deliver the goods, made mandatory the placement of contracts by negotiation.

The historic job which American manufacturers are doing in response to those orders completely supports and vindicates that decision. Our production record speaks for itself. This has been possible because procurement — the placing of orders — is being done on a fast and economical basis.

Purchasing by negotiation has always been the common practice in industry. It is inevitable that the Government must benefit from the experience of private industry, and from the experience of this war; that negotiation for the sake of economy and common sense operation must be a part of the post war procurement scheme is a conclusion which any student of the subject must concede.

Naturally, the effect of such a change would be far-reaching. To conduct procurement by negotiation in peacetime will require changes in the law. Legislation which discards RS-3709 and 3710 (3709 and 3710 are those sections of the Revised Statutes governing Federal purchases and contracts, necessitating advertising for proposals, public bid openings, award to lowest responsible bidder meeting minimum specifications and deliveries, etc.) and substitutes procurement by negotiation must simultaneously be accomplished by a revision of other segments of the Government purchasing structure.

For the verb "negotiate", the dictionary says "to transact business". That is blunt and direct; it is the proven method of American private enterprise, because it signifies speed and economy of action, resulting in economy of dollars. What business enterprise could afford the luxuries of the peacetime Government procurement red tape?

Skilled Buying Needed

One of the necessities in negotiated procurement is having highly skilled purchasing officers. Negotiation takes buying out of the rule book and places responsibility where it belongs — on the purchasing official himself. The emphasis shifts from clerical efficiency to skill, judgment, and a thorough knowledge of the need and the ultimate use. Keeping in constant touch with supply sources and knowing thoroughly the developments in new products, are essential.

This is no reflection upon the peacetime qualifications of the Government purchasing officer. Good judgment and knowledge of the job have always been essential. The emphasis, however, is far different.

Under negotiation, the purchasing officer is an independent specialist, and his errors are mirrored immediately in the cost ledger. In avoiding errors, the purchasing officer is obliged to bring into play his individual skill, his knowledge of markets, and his ability to perceive new developments. For economy, he "shops" instead of ordering. He bargains instead of paying the price.

Purchasing should be a flexible function, sensitive to changing conditions. Its technique should not be dictated by a law passed in 1873, when its intelligent performance is based upon the circumstances in 1943.

It is quite true that Government buying must always be above suspicion, and this will be the argument for returning to the old peacetime system. I am a great believer in the adequacy of existing safeguards in our Government organization against any abuses on negotiated contracts, but if more are needed they can be established without returning to the inflexible regulations of RS-3709 and 3710.

THE GOOD WILL PROBLEM IN TODAY'S BUYING

Buyer-seller relationships under the strain of wartime business may be the key to post-war outlets and distribution, and is of particular importance as we come closer to the turn of the pendulum.

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A Symposium of Purchasing Opinion

By
HERBERT E. FLEMING

★

ARE some suppliers in the sellers' market of today's war conditions neglecting to give the service they should to the Purchasing Agents and buyers of the companies among their old customers?

Are some of the companies that are seeking to win good will by advertising promises of wonderful post-war products failing now to cultivate their old customers and thus failing to conserve the good will built up through years of advertising, selling, and service in the past?

Are manufacturing companies in general neglecting to have their experienced salesmen call as frequently as they should on their customers?

Are those companies that are now restoring their key salesmen to making regular calls leading the way along right lines?

A Mutual Problem

Should the badgered Purchasing Agent, adjured by his management and others in the buyers' markets of the past to be considerate toward suppliers and their salesmen, now apply the reverse lever? Should he now urge his management to have his company's sales force make special efforts to serve the Purchasing Agents of its customers?

Is it not timely for all in management positions—chairmen, presidents, vice presidents, advertising managers, sales managers, and others—to recall vividly the old basic principle that every purchase involves a sale and every sale a purchase?

These are some of the questions growing out of a series of interviews with eight representative purchasing executives in companies now engaged in various lines of war products and representing a wide range of industrial and consumer products in peace-time manufacture.

The Purchasing Agents and Directors of Purchases were practically unanimous in reporting that many fewer salesmen have been calling on them nowadays than in the days before war contract activities dominated the industrial scene—and many fewer than they would like to see. Some of them qualified the statement, however, by pointing out that several suppliers have been outstanding in having experienced salesmen work with them, as usual, on their procurement problems.

Others acknowledging the general situation, stated that they were scarcely in a position to voice grievances because their own companies were not having their salesmen contact customers as diligently as before the war, partly because orders have come so easily without special sales effort, and partly because of the shortage of manpower. Two volunteered the information that with the month of September, some of their key salesmen who had been doing important office or engineering work or expediting, would be back on their routes once more, calling on their old customers.

Good Will Is Lost

This series of interviews was touched off by some feeling remarks from a seasoned Purchasing Agent with a medium-sized manufacturer of precision instruments—a progressive and liberal-minded executive who, over a period of years, has earned a very favorable reputation not only as an able buyer and keen analyst of business conditions, but for his consistent policy of courtesy and cooperation with all salesmen calling upon his company.

"If companies proclaiming promises of great things to come in the post-war period want to do a good post-war job with Purchasing Agents," he said, "they should be opportunists now. They should seize the opportunity to win or to maintain good will and do it right now with service to us, instead of waiting until after the war is won and over.

Service is Poorer

"Take our experience with taps," he continued. "Our company had been buying taps from a certain concern for a great many years, even before I took hold here. Their prices and quality were right, and I kept on buying from that supplier. Recently, when we received a big order requiring a lot of special tooling, we gave a correspondingly big order for special taps to that company along with our orders for standard sizes. After holding the order for quite a while, the supplier informed us that it would keep the standard business but we would have to go elsewhere for the specials.

"I tried to reason with them, but they were glutted with business and, at least as I see it, short-sighted. All manufacturers in that field were in about the same position, but I was able to place the orders with another company, which had been seeking our business for years and was ready to give us the specials as well as the standard items. Who

will get our business after the war is over? It won't be that old supplier, not so long as I am Purchasing Agent here."

That is a very human reaction. It is rather strikingly reminiscent of opinions expressed by some disappointed vendors back in the days when sales organizations were awaiting their turn to occupy "the driver's seat". Even in an isolated instance, it emphasizes the importance of this matter of good will.

More Grievances

The Purchasing Agent had a few more specific examples. One case concerned a company dealing in a common packaging supply now in great demand. That company, a sort of family affair, let its salesmen go and the family members, according to this buyer, are skimming the cream off the business, shipping their product here and there with indiscriminate opportunism as they happen to have it ready, instead of giving any assurance of supply to regular customers.

Still another instance cited was that of a company from which he had been buying a certain type of synthetic compound. This supplier, he says, suddenly decided to switch its production to another type, but the Purchasing Agent simply had to have the first kind for use in producing certain delicate equipment for bombers. He eventually prevailed upon the vendor to continue supplying the original compound, but only after appealing to the authorities and prime manufacturers concerned with bomber production to exert their influence to this end.

"Another grievance I have," he continued, "concerns a company that has been supplying us with steel. This company was accepting orders for delivery six or seven weeks from the date of the order. In the meantime, as they happened to have material on hand, they apparently would sell it to anyone who happened to call up their office. Then, when the delivery dates drew near, and buyers were expecting their promised orders, the stock was no longer available and the delivery dates would have to be deferred another two or three weeks. That situation, fortunately, has been brought under much better control, and acceptance of an order involves a stated time of delivery which must be observed.

"It is only fair, also, to add that this experience was not typical. One of the leading steel supply houses from which we buy has kept its experienced salesmen calling on us, soliciting our business and working with us to see that our requirements were met, explaining their troubles frankly and keeping us informed as to what we could expect when, because of circumstances beyond their control, they were unable to make deliveries on schedule."

A Happier Experience

Another side of the picture is given by the Purchasing Agent of a large equipment manufacturer.

"I've heard complaints against salesmen and their concerns in the cases of other companies," he said. "But so far as I know, our sources of supply have extended themselves and have done everything possible to give us what we have needed.

"Usually, where a Purchasing Agent isn't getting what he should in these times, it's because he hasn't been pitching pennies with the salesmen in days gone by. We're getting good results from our past contacts, not only with salesmen, but also with their vice presidents, presidents, and board chairmen. We've made it a practice to contact those offcers and I wouldn't hesitate, if necessary, to call up the chairman of the board at his home in the middle of night, to talk with him about our needs.

"We've been using our own salesmen on clerical and engineering work. With the inability to get competent office help, it was simpler to take the boys who had been selling and who know our products and terms. But we have seen to it that they kept in touch with their customers by mail and by occasional calls. Beginning this fall there is going to be quite a change. They are going on the outside again to make their regular calls, as in the days before war production."

The Supplier's Quandary

"The one grievance we've had was about a supply of steel wire," said the Purchasing Agent of a prominent manufacturer of screw machine products, "and I am quite sure that the supplier's failure to make delivery to us was not intentional. That company invited the government to get them some work. The government responded, only too well, with the result that the plant was so swamped that it didn't have any capacity left for its regular customers.

"They can't be blamed; we've done the same thing here. We've had to deliver to keep aircraft plants going on warplanes, and it has had an adverse effect on our service to regular customers. But we have put the cards on the table, and in most cases they have understood.

"For some time, our own salesmen did not go out on their usual schedule. Lately, however, they are back on the road and are contacting our old customers even though we are not actively soliciting additional business."

Three Opinions

The Director of Purchases of a large company in the metals field remarked, "Those Purchasing Agents who are having trouble about getting service from their suppliers' salesmen probably have themselves to blame. They probably haven't shown the right attitude toward the salesmen in the days before the war brought the sellers' market."

Another purchasing executive for a leading manufacturing company, engaged both as a prime contractor and as a subcontractor on war products, reported, "Many fewer salesmen are calling on us than we would like to see. This is probably because the companies are unable to get the right kind of men, for lack of manpower. In today's market, such salesmen as do call are much more independent than they were in times of buyers' markets. There have been some cases where we felt that the suppliers' salesmen haven't shown as much interest in our problems as we try to have our representatives show in the problems of the companies to which we sell."

When told that some companies had serious grievances of neglect by their suppliers, the Purchasing Agent for a manufacturer of screws and bolts replied, "That is not the case with us. The legitimate houses, with whom we try to place our business, are doing everything they can to cooperate. They are working under great difficulties and they are hampered by government regulations. It is true that the key men do not get around as frequently as they used to. They began to be lax about a year ago, but the situation is noticeably better now."

Buying Becomes Impersonal

"Some of the salesmen that we used to see regularly don't come around at all now," said the purchasing executive of an electrical manufacturer. "I can think of a

(*Continued on page 273*)

LONE WOLVES

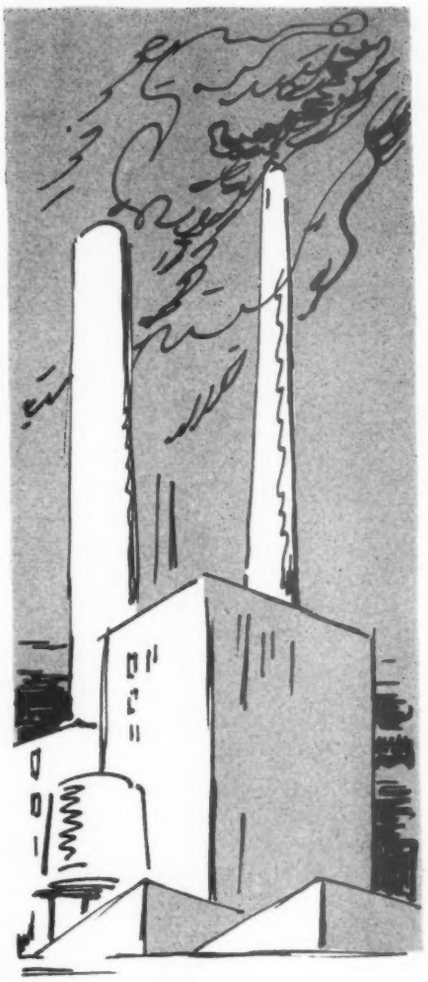
Most of us run with the pack, but there comes a point at which we can not escape individual responsibility

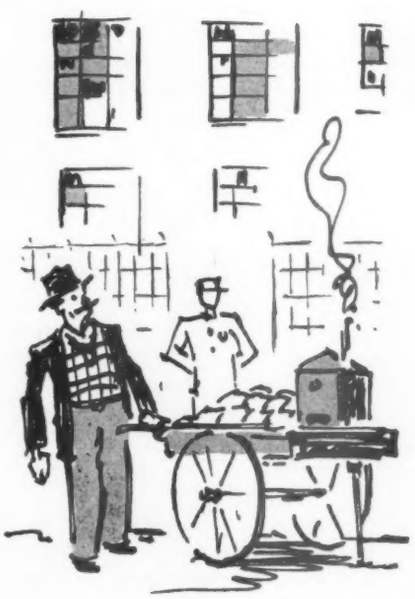
LOOKING back over a life somewhat misspent working for other people, I'm inclined to agree with the fellow who said he'd rather run a peanut stand and own it, than be president of United States Steel. When our forefathers decided upon the Constitution which —despite certain infections of New Deals, deals from the bottom of the deck, and deals odoriferous—is still the charter of our national life, this was a nation of individualists. Each fellow had his little farm, or his little sawmill, or his little print-shop or store. If he had a few employees, they were all his kind of people. just as good as the boss. Folks didn't make a lot of money in those days, but they didn't need a lot and everybody got along.

The Little Fellow

Framing our constitution, the delegates had only the small man in mind; there weren't any very big ones. They could not foresee the great industrial corporations, the great transportation systems. Huge aggregations of capital, kicked in by everybody and pooled to run a big business, were something beyond their ken.

Now, a business employing less than a thousand people is in the piker class. There was a day when a callow youth might be hired to take the detail of ordering small stuff off the boss's hands; but woe to him if he spent more than eighty cents unless the boss gave permission. Conceivably the business grew and prospered, its employees leaping from tens to hundreds, from hundreds to thousands; and the callow youth grew to be a regular Purchasing Agent—from a sort of clerical vermiform appendix to a vital member of the force. Each year, because he's been a good boy, the great-hearted boss raises his pay,





until when the employees are in the thousands, the young man is in the money—a substantial citizen. But new blood gets into the executive staff, and the Purchasing Agent doesn't get any younger. Then one fatal day he gets a sweetly-phrased note from the Vice President in Charge of Executions, enclosing a check for maybe a month's, maybe a year's salary, the blessing of the officers, and permission thenceforth to go to hell in his own way.

If he has had good luck, kept down his family's keenness for competition with the Joneses, acquired a place to live that's his own and has a few endowment policies coming due, he may have enough potatoes in the bin to get by with for the rest of his life. If he has cultivated a few hobbies to keep him amused, his remaining years may be full and content.

But if he has had a lot of sickness, maybe a case of poliomyelitis in the house, or the kids have spent too much money in college; if his wife has felt the urge for an occasional larger house, a new car every year and a flivver for the kids; if she has to match the Joneses rug for rug, and substitutes for her one-time interest in corned-beef-and-cabbage a passion for cocktails and bridge—then the Lord High Executioner has dealt him a nasty hand.

Social Security

In every company we find both kinds, the man who has been thrifty and played in luck (usually they go together), and the man who has done his damnedest, but couldn't lay up a cent. One man may be, probably is, just as good as the other; but to some men money sticks, and to others it doesn't.

The weakness of our great system of capital aggregations and hordes of salaried employees is just that. When a man for years has given his best, a pretty damned good best, if his personal affairs don't hold out, he is just plain out of luck. After twenty-odd years passed in the atmosphere of one business, most men are apt to become a little too set to accommodate themselves to the

★

By **CHARLES FORD**

angles of a new place; and after hanging on to a pay envelope for so long they view with trepidation letting go and risking their little capital, if any, in enterprises of their own.

And that isn't necessarily the man's own fault. The regular guy tries so hard to deliver the goods for his house that it doesn't occur to him to try elsewhere until he has to. The fault is more in the system under which he has lived for a couple of decades. This state of affairs probably suggested our social security laws, piffling and inadequate as they are. I could write a volume on social security and the way it ought to be handled; probably if I were such a damphool my friends and relatives would pityingly tap their foreheads and whisper "Matteawan."

A lot of men, successful as employees, just haven't the right accumulative slant to run a small business successfully. One difference is that instead of the pay check coming in every Friday, it goes out; another is that one doesn't learn to cherish pennies in a big organization.

And others are just too dumb. Izzy Fineberg tells of one:

Success Story

"This feller, he's what you call a co-religionist of mine. He comes over from the old country after I did, and he goes to work for a while in the junk business. But like lots of our people he gets ideas such as they are and he thinks it would be good to be a merchant. But about all he knows is he sees some fellers with apples in push-carts on the street. So he saves him little money and buys him a push-cart and some apples, and he wheels it around the streets and learns to holler 'apples.' And, well he gets along and pays his board and room rent and buys him some more apples.

"Then some folks asks him ain't he got any oranges and he gets more ideas. He sells the old push-cart and buys him two smaller ones; and he puts apples in one cart and oranges in the other, and goes around hollerin' apples and oranges behind two push-carts. One he pushes with his right hand and the other with his left. He don't get him much more money but he pays his board and buys more apples and oranges and gets along. Then some customers asks him ain't he got any bananas and he gets more ideas. That ain't so easy to figure out, but he finally gets him another push-cart and some bananas, and he pushes the orange cart with one hand, and the apple cart with the other; and the banana cart he tows behind him with a strap. And he runs them three push-carts for years, just like them one-man bands you see on the street where they plays drums with their feet and a banjo with their hands and a harmonica in a frame across their faces. He gets along about the same as before. He works hard pushin' and pullin' them carts and hollerin' apples and oranges and bananas, and pays his board and buys some more to fill up his carts; and he keeps that up until suddenly an uncle in the old country dies and leaves him hundred thousand dollars.

"Then he retires. And some one asks him how much he's worth, and he says countin' what he made with the push-carts and what his uncle left he's got hundred thousand dollars, and he's still got the push-carts, and he thinks that's enough to retire on."

Joys of Independence

Just the same, if one can continue to eat regularly, there must be a lot of satisfaction in being a lone wolf. If you want to sleep in the morning there is no boss to make sarcastic remarks. You don't have to time your steps to those of a lot of other fellows in the same chain-gang. If you want to lock up and go to the ball game, who shall say you nay if you have the price of a ticket? You may not make so much money, and you always have to balance the lean months up with the flush ones so you can keep your bills paid and continue to eat.

It's so often the case, when you have a regular pay-check, you blow yourself to something you want and know you can't afford, counting on the next check coming in soon enough to square yourself. Keep up the good work and you get lots of things you want and enjoy, but when the end of the year works around you haven't any money and have some mighty bad habits.

The occupation of purchasing—I don't say profession, because it ain't—is, I am convinced, pretty free from all kinds of skullduggery. The Purchasing Agent, take him by and large, is a pretty good citizen. But, tied to the salary-wagon, he may, through no fault except that of failing to utter a loud and emphatic "No" occasionally in his private affairs, get himself pretty close to shore financially with pay-checks spent before they are signed. If this gets noised about, even though his business transactions are absolutely wise and clean-cut—well, bosses are suspicious galoots. "This bird is in trouble and we'll have to look out."

Many employers are interested only in results; but there's a kind of boss who encourages whispering and who hasn't the wisdom and tolerance to find out things for himself. I think, if I were a boss, and saw a good man getting himself into a financial snarl when I knew he stayed home nights and didn't play the ponies, I'd get him on the carpet in a friendly, constructive way, and take his affairs apart to see what made them tick out of time. Adversity is damned unpleasant, but it may turn out a bully teacher.

Brother, I think it would be fun to be a lone wolf if you can stir enough rabbits out of the brush so you can eat regularly. You're free as air, independent as a hog on ice, and when you do as you damn' please there's nobody hurt but yourself. As a Purchasing Agent, you can dish it out many times; as a free lance, you also have to take it. You've got to think in terms of turning things into money, not money into things; and when you've earned your money you have to scrutinize and put a direction tag on every Jefferson nickel.

And if your family shows a disposition to race with the Joneses, you have to be on hand to scratch the entries.

* * *

WPB MANUAL ON TOOL TIPPING

Manual has been prepared by consultants of the Conservation Division and the Tools Division of the WPB which outlines the elements in tool-tipping specifically and briefly. Howard Coonley, director of the Conservation Divn. points out that a large tonnage of critical alloys can be saved by increased emphasis on tool conservation.

High-speed tool steels contain approximately 20% of the following highly critical alloying metals; tungsten, molybdenum, vanadium, chromium and cobalt. When there is breakage, broken tools can often be reclaimed. They can be cut up into smaller pieces that are used as cutting tips, brazed into shanks made of non-alloyed steel, thus conserving the critical alloyed steels. Widespread adoption of tool-tipping practices could mean a saving of 75% of the 36,000 tons of "tippable" tools estimated as being needed in 1943.

LOOK TWICE!

IT'S *MORE* THAN A SCALE

SURE it's a scale—a *good* one! NO better weighing machine is made. But this Fairbanks-Morse Dial Scale with Printomatic is more than a scale—and fast, accurate weighing is only one of the jobs it does! For modern Fairbanks-Morse Scales are *tools* that *speed* production.

They keep books, making printed records of incoming and outgoing shipments. They "read" themselves and *print* the weight record on a ticket or tape. They control batching. They measure paint ingredients. They guard secret formulas. They count small parts. They save time and money by preventing human errors. They can be fitted into your production flow to eliminate duplication of effort and accelerate output. If we can't show you how—that's our loss—not yours. Fairbanks, Morse & Co., 600 S. Michigan Avenue, Chicago, Illinois.

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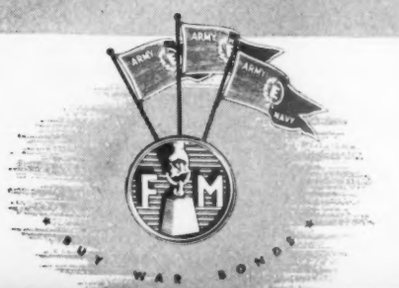
Scales



New PRODUCTS · IDEAS

FOR ROCKWELL TESTING THREE MODELS

IMPROVED Hardness tester for Rockwell testing, in three models, is announced by Clark Instrument Inc., Dearborn, Mich. The instrument is said to embody a number of features contributing to accuracy of measurement and speed of operation. Instrument is supplied with diamond cone penetrator and steel ball penetrators for Rockwell testing on "C" scale, "B" scale and most other standard Rockwell scales.

NEW SMALL CAPACITY OIL RECLAIMER

SMALL Capacity lubricating oil reclaimer designed for small plants and organizations having their own fleet of trucks and motor cars, is announced by the Youngstown Miller Co., Sandusky, Ohio. Unit has capacity for purifying 8 gallons of dirty oil in 70 to 90 minutes. For handling larger quantities of lubricating or hydraulic oils, the company offers reclaimers in seven other sizes.

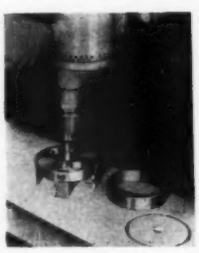
NEW PLANT BROADCASTER

SIMPLIFIED low-cost unit for voice-paging and music broadcasting for small or medium sized industrial plants is announced by the Operadio Mfg. Co., St. Charles, Ill. Standardized and "packaged" to include in a single unit the most popular features of more elaborate installations, the unit operates 20 to 40 loud speakers and covers an area up to 100,000 square feet. The cabinet requires only 22 inches of floor space and comes ready to plug in.

MEASURES TO BOTTOM OF BLIND HOLE

NEW Blind hole type of gage announced by Federal Products Corp., 1144 Eddy St., Providence, R. I., enables the user to check right down to the bottom while exploring the inside diameter, out-of-roundness, taper and other conditions of a hale. Gage is said to be highly efficient for inspecting holes of all sizes from ½" up in diameter and of various lengths. It measures conditions of a hole down to within .030" of bottom.

CIRCULAR GROOVE CUTTER SPEEDS CONSTRUCTION



CUTTING tool which speeds up timber connector construction is announced by Circo Tool Co., 264 E. Ogden Ave., Milwaukee 2, Wis. Grooves for accommodating steel ring connector joints are cut by the tool which is powered by a portable electric drill. The cutter is made with either two or four renewable blades for split rings from 2½" to 6" in diameter. Cutter may also be used in drill press or in hand-operated brace and bit. A different type of cutting head, with inside blades, is furnished to countersink bearing plates of the same diameter as the connector rings.

CLEAR-VIEW OFFICE & FACTORY ENVELOPES

KLEER-VU is the trade name of envelope with transparent cellulose facing, for keeping factory orders, office forms, blueprints, etc., clean and neat —and visible at all times. Standard size is 10" x 12½", one side open for inserting material. Various sizes available for special needs. Envelope has bound leatherette edges on all sides. Free sample may be obtained from American Plastic Products, 553 S. Western Ave., Los Angeles 5, Calif., or 476 Broome St., New York 13, New York.

HAND CRANE INNOVATION

COMPLETE self-contained unit to convert the bridge travel motion of hand operated cranes to electric drive, known as the Budgit Bridge Drive, is announced by Manning, Maxwell & Moore Inc., Muskegon, Mich. Unit is said to be suitable to convert hand operated cranes of either the single or double girder type of any make hand operated crane of 10 tons or smaller, provided crane is of the geared type and operated by a chain wheel of 24" or smaller diameter.

EVAPORATES 120 GAL. OF WATER IN 24 HRS.

INDUSTRIAL humidifier capable of evaporating 42 lbs. of water per hour or 120 gallons in 24 hours, is announced by the Techtmann Industries, Inc., 828 No. Broadway, Milwaukee 2, Wis. The humidifier is known as the "Little Giant". It is 10" long and 3" in diameter. Can be installed as single unit or in cluster of 2 to 10 or more.

CARBIDE TIPPED SCRAPERS

SCRAPERS tipped with cemented carbide are announced by the Carboloy Co., Detroit 32, Mich., as a more practical replacement for converted files and other steel scrapers. It is said to speed the finishing of machine tools, surface plates, etc., making possible the use of flame-hardened surfaces for such parts. The Carboloy tipped scraper is said to be minus any tendency to scratch or dig into the surface being scraped. The new scrapers have special steel handle strong enough to withstand pressure without deflecting or bending.

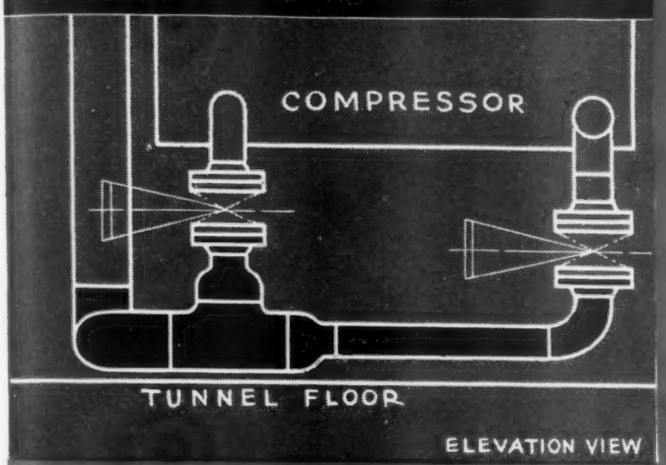
(*Continued on page* 124)

NO. 9 OF A SERIES
HOW TUBE-TURN WELDING FITTINGS BENEFIT WAR INDUSTRY

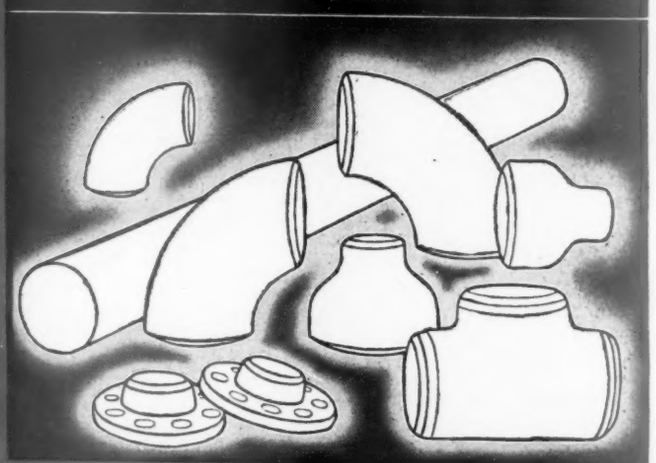
The FIRST SEAMLESS WELDING FITTINGS 1ST AND STILL THE BEST

Save 50% time by preassembling piping with TUBE-TURN welding fittings!

PROBLEM: Install Section of Piping into System



1st STEP: Assemble Pipe and Tube-Turn Fittings



2nd STEP: Preassemble Section in the Shop

FINAL STEP: Place Preassembled Piping Section into Position to Complete System

PIPING welded with Tube-Turn fittings can be installed from 50% to 75% faster—thanks to faster aligning, welding and preassembling in the shop. No torch cutting or fitting fabrication necessary. Tube-Turn fittings are ready to weld —types, sizes and weights for all needs. For stronger, lighter, permanently leakproof piping systems—weld with Tube-Turn fittings! Send for helpful catalog and data book, No. 111.

Buy another War Bond this week!

TUBE-TURN
TRADE MARK
Welding Fittings and Flanges

TUBE TURNS (Inc.) Louisville, Ky. *Branch offices:* New York, Chicago, Philadelphia, Pittsburgh, Cleveland, Dayton, Houston, Washington, D. C., Los Angeles. *Distributors in principal cities.*

Does a riveter, chipper, welder or chemical worker, busy at his job, care that in the manufacture of Willson protective lenses we discard tons and tons of glass every year? Perhaps he hasn't given it a thought, but Willson throws away glass which the worker's own eyes would say was perfect...the flaws of which only delicate scientific machines can detect. Such rigid inspection may save that worker's eyes some day—and actually increases his efficiency *every* day.

All Willson protection is *scientifically engineered*. That is why so many Safety Directors and Purchasing Agents specify "Willson or equivalent" for all kinds of head, eye and lung protective equipment. For 73 years Willson has set the standard.

Willson Heavy-Duty Cup Goggles, RR50

Composition cups for use in "hot" jobs, where humidity and lens-fogging are problems. Unusual amount of ventilation. 50 mm. clear Super-Tough lenses.

GOGGLES • GAS MASKS • HELMETS • RESPIRATORS

WILLSON DOUBLE

PRODUCTS INCORPORATED
READING, PA., U.S.A. *Established 1870*

(Continued from page 122)

LIGHT WEIGHT PORTABLE DRILL

LIGHT - weight portable pneumatic drill (1 lb. 12 oz.), with all plastic housing and handle is announced by operates at 2500 The Aro Equipment Corp., Bryan, Ohio. Drill is 6¼" in overall length, RPM, and accommodates ⅛", 3/16", ¼" or 5/16" drills with Jacobs chuck. It has full ball bearing construction, and a built-in visible oiler.

TESTS BOXBOARD & SIMILAR MATERIALS

NEW boxboard tester for accurately determining the strength of fibre boxboard and similar materials is announced by the Special Products Division of the General Electric Co., Schenectady, N. Y. The tester will determine the strength of boxboard from .014" liner to .140" solid kraft, as well as waterproof boxing material for oversea shipment. Unit will measure the strength without deforming or flattening the corrugations, of corrugated board from the lightest non-test grade to the heaviest grade of double wall board, as well as thin plywood and vulcanized fibre.

TEMPERATURE CONTROL SWITCH

NEW temperature control switch announced by the Burling Instrument Co., 253 Springfield Ave., Newark, N. J., has three switches which may be (1) normally closed, opens on a rise of temperature; (2) normally open, closes on a rise of temperature; or (3) single pole double throw switches. Difference between operating temperature of any two switches may be from 300 to 800 deg. F. The instrument has a heavy cast iron base and a cast cover making it water and vapor tight.

"PERMA-GAP" FLUORESCENT LAMP BALLAST

NEW Magno-Tronic ballast with patented "Perma-Gap", which controls the flow of current into the lamp, thus preventing the premature black ends caused by deterioration of cathodes, is announced by Industrial Electronics Corp., 951 McCarter Highway, Newark, N. J. Ballast is said to control the flow of current into the lamp as close as 99.99%. These ballasts are guaranteed for two years, and manufacturer says they will serve a life time if not abused.

SEAL-LESS COOLANT PUMP

SMALL Sized sealless coolant pump, especially designed for providing dependable coolant flow to small machines such as hand mills, surface grinders, internal grinders, drill presses, and tapping machines, has just been placed on the market by the Pioneer Pump & Mfg. Co., Detroit, Mich. Though less than 16 in. high, its performance is claimed to be equal to that of its larger counterparts. The pump, cataloged as Model MVBD, is believed to be the first pump having three outlets which permit a choice of three piping arrangements- to the right, to the left, or back into coolant sump through intake bracket. It is designed to be mounted on outside of coolant tank or machine pedestal, and is said to function efficiently with an extremely low water level, particularly in shallow places where coolant is out of reach for most pumps.

ANNOUNCE RUBBERLESS BUILDING WIRE

NEW TYPE building wire which has the approval of the Underwriters Laboratories, Inc., is announced by the Hazard Insulated Wire Works, Wilkes-Barre, Pa. No critical war materials (except the copper conductor) are used in its manufacture. Trade name of the new wire is Hazapak. It is produced in two types, i.e.: EG, emergency grounded, and EI, emergency insulation. Hazapak wire is available in all regular building wire sizes for 600 volt ratings, and can be supplied in all standard colors.

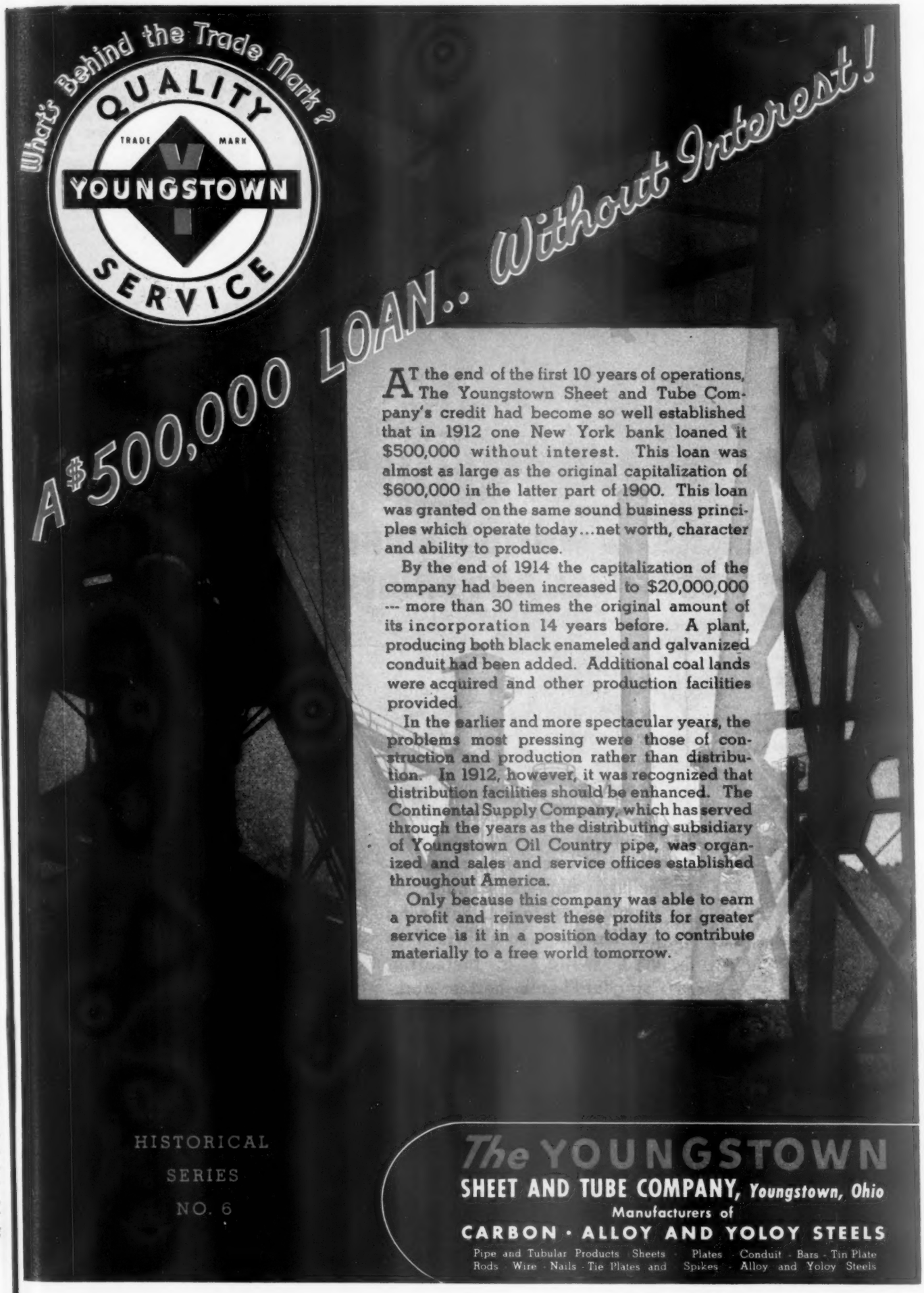
BINKS THOR SPRAY GUN

NEW Thor No. 17 Spray gun is announced by the Binks Mfg. Co., 3114 Carroll Ave., Chicago 12, Ill., as an ideal general purpose "wartime" gun. Manufacturer states that it can be used for all work performed by Thor #7 and Thor #2 models for which it is a thoroughly dependable substitute.

FLEXROCK ANNOUNCES AWOG FLOORS

NEW Industrial floor product announced by Flexrock Co., 2319 Manning St., Philadelphia. Pa., is said to resist the penetration of acid, water, oil and grease to a degree never before approached. AWOG floor is said to be smooth and dustless, and to be able to withstand the heaviest traffic and punishing use. It is recommended for new floors, for overlays on concrete, brick, stone or wood, and for repairing and resurfacing areas of any size.

(Continued on page 126)



AT the end of the first 10 years of operations, The Youngstown Sheet and Tube Company's credit had become so well established that in 1912 one New York bank loaned it $500,000 without interest. This loan was almost as large as the original capitalization of $600,000 in the latter part of 1900. This loan was granted on the same sound business principles which operate today...net worth, character and ability to produce.

By the end of 1914 the capitalization of the company had been increased to $20,000,000 --- more than 30 times the original amount of its incorporation 14 years before. A plant, producing both black enameled and galvanized conduit had been added. Additional coal lands were acquired and other production facilities provided.

In the earlier and more spectacular years, the problems most pressing were those of construction and production rather than distribution. In 1912, however, it was recognized that distribution facilities should be enhanced. The Continental Supply Company, which has served through the years as the distributing subsidiary of Youngstown Oil Country pipe, was organized and sales and service offices established throughout America.

Only because this company was able to earn a profit and reinvest these profits for greater service is it in a position today to contribute materially to a free world tomorrow.

HISTORICAL SERIES NO. 6

The YOUNGSTOWN
SHEET AND TUBE COMPANY, Youngstown, Ohio
Manufacturers of
CARBON · ALLOY AND YOLOY STEELS
Pipe and Tubular Products · Sheets · Plates · Conduit · Bars · Tin Plate
Rods · Wire · Nails · Tie Plates and Spikes · Alloy and Yoloy Steels

HARD PENCILS ON WHITE-X MAKE SHARPER DRAWINGS AND PRINTS

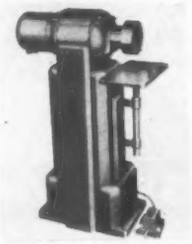
You can't draw a fuzz-edged hard-pencil line on White-X, and prints — white, blue or tracing copies — made from pencil drawings on its base of glass-like transparency have a definition as sharp as carpet tacks. White-X has a dust-repellent high-gloss back, is moisture resistant on both sides and has cloth durability. Once used, White-X is, thereafter, "standard" for better workmanship.

Write or phone our Chicago office or your nearest Post dealer for Free sample of White-X. Fine tracing media and sensitized papers are ready for immediate delivery.

The Frederick Post Co.
Phone KEYSTONE 7000 · CHICAGO

(*Continued from page* 124)

MAGNETIC POLISHING LATHE



MAGNETIC polishing lathe designed for the specific purpose of speeding up production by eliminating the difficulties encountered in holding odd shapes or sections in a conventional chuck or collet, is announced by the Lima Electric Motor Co., 4401 Findlay Road, Lima, Ohio. It is said to be especially suitable for highly finished parts—it leaves no chuck or collet marks. It holds parts from 1½" diameter up. Production increases up to 300% are reported.

GRANITE PRECISION SURFACE PLATE

SURFACE plate of natural granite, said to be harder than any tool used on it, is announced by the Herman Stone Co., Dayton 4, Ohio, for inspection, tool-room and production departments. Plates are finished to 1/10,000 inch over all with 100% bearing surface. Manufacturer states that plates do not swedge nor become charged with abrasive materials, and that under normal working conditions are practically indestructible.

TRUCK POWER UNIT

HEAVY - Duty, Ready-Power gas-electric power plant, Model J, designed and built for 10 to 30 ton electrical industrial trucks, is announced by The Ready-Power Co., Detroit, Mich. These units are claimed to generate, as required, all the power than can be used on these trucks. Unit consists of gasoline engine closely coupled to a direct current generator complete with all accessories in a steel housing for fastening to the truck chassis.

TEMPORARY FAST DRYING PROTECTIVE COATINGS

QUICK - Drying temporary protective coating is announced by the Insl-X Co., 857 Meeker Ave., Brooklyn, N. Y. Thin film applied by brush or dip is said to air dry at a maximum of 15 minutes depending on atmospheric conditions, and on a clear dry day the drying time is claimed to be 5 minutes. It is said to cover equally well on all finishes from rough to smooth, edges, etc. Coating has withstood 100 hour 3% salt spray tests on steel, copper, brass and aluminum. Solvents are unnecessary for its removal, as it is easily stripped off by hand.

(*Continued on page* 128)

Faster Action on the Production Line

Move It Anywhere

Cardineer is light, portable and occupies but small space. With ease it can be rolled wherever needed.

Cardineer Controls Increase Efficiency in the Plant

● With material and production records on Cardineer Rotary Files, progress of orders through the shop will be speeded up amazingly. In many plants Cardineer is saving 40% to 60% in the time of keeping records—at a saving of 40% in manpower.

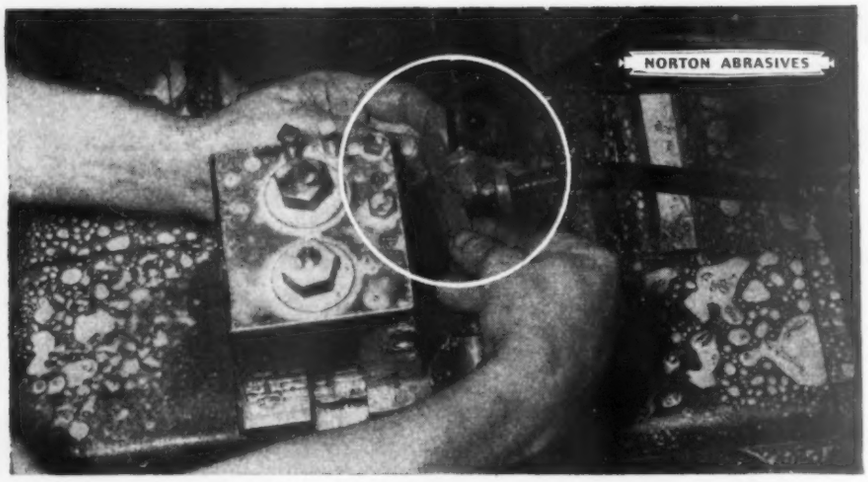
Cardineer puts any one of 6000 cards immediately at hand—for reference, or for posting. Cards are instantly removable, and just as quickly snapped back into place.

For greater efficiency install Cardineer, now.

Ask For Yours: **Booklets in time-money saving are free as follows: Inventories ☐, Costs ☐, Payroll and Personnel ☐, Plant and Equipment ☐, Purchases ☐, Production ☐ Check and attach to your letterhead.**

DIEBOLD, INCORPORATED • CANTON, OHIO
Formerly Diebold Safe & Lock Company
Branch Offices in Principal Cities

DIEBOLD *Cardineer* ROTARY FILE



FASTER, BETTER, MORE CUTS

Another Case History of Hand Stoning

THE JOB

Finish cutting Sway Braces, 1025 cast steel; removing .015″ stock with ¾″ square and rounded 78-B cemented carbide tipped lathe tool bits.

THE RESULTS

1. Increased cutting speed.
2. Four to five times more output between regrinds.
3. Less frequent removal and resetting of bits.
4. Savings in tools, time and expense—fewer grinds.
5. Fewer chipped tools because regularly reconditioned.

IT WAS A WAR SUB-CONTRACT. The cutters had been producing 50 to 60 pieces in about half a day. They were then reground—a slow, expert job to preserve proper rake and clearance angles.

Our man recommended "Crystolon Stones for Carbide Tipped Tools." Using first a medium and then a fine Crystolon stone, the tool bit was touched up by hand after every 35 to 50 pieces. ***This hand stoning was done in less than two minutes without removing tool bit from post.***

Similar savings in expensive alloy tipped tools and in producing and grinding time are possible to thousands of users throughout the country today. Why not have a Behr-Manning Abrasive Engineer or one of the able representatives of our Certified Distributors counsel you on the tremendous advantages of hand stoning? And be sure to ask for a copy of our brand new booklet, "Hand Stoned Cutting Tools."

•

Crystolon Stones (silicon carbide) 3½″ x ¾″ x ½″ for Carbide Tipped Tools are available in three grits: coarse, medium and fine, at 50c per stone.

BEHR-MANNING · TROY, N. Y.
(DIVISION OF NORTON COMPANY)
ALSO RELIABLE COATED ABRASIVES SINCE 1872

(*Continued from page* 126)

ABRASIVE SANDING DISCS

NEW line of abrasive sanding discs made of aluminum oxide grit firmly bonded with a special heat-resisting resin to a chemically treated, super-pliable, genuine fibre back, is announced by the Fibre Abrasive Corporation, 1129 E. 74th St., Chicago. They are known as the Marvel discs. Manufacturer claims they will not soften under high speed frictional heat, and also that they require less cleaning and replacement than conventional glue-bonded discs. They are available in diameters from 6″ to 30″ and in all grit numbers. Sample disc for testing may be obtained by writing to manufacturer.

EXPLOSION-TESTED LOCOMOTIVES

DESIGNED for use in operations where gas exists in explosive quantities or mixtures, explosion-tested locomotives available in a range of sizes suitable for operation on track gages from 36″ to 56½″ and for 250-volts or 500-volt direct current, are described in 18 page booklet (B-3232) copy of which may be procured from Dept. 7-N-20, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

MINIATURE SCREWS

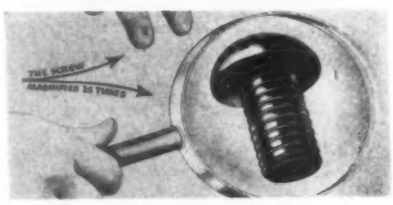


ILLUSTRATION shows 1/72 (0.72) diameter screw made by Manufacturers Screw Products, 216 West Hubbard St., Chicago, Ill., specialists in precision screws for precision instruments such as aviation headphones, microphones and other devices of hairtrigger delicacy. These tiny screws are said to be so nearly perfect that they may be magnified many times without disclosing a single flaw.

SEALS BREAKS IN WALLS AND FLOORS

QUICK - Setting, permanent waterproof material has been developed by Tamms Silica Co., 228 No. La Salle St., Chicago, for sealing breaks in masonry walls and floors. Name of product is "Stop-It". It is said to be ideal for repairing below ground surfaces that are seeping water, and to be a fine patch material for repairing walls and floors, and excellent for pointing brick work, anchoring jobs, and general repair. It comes in powder form.

(*Continued on page* 130)

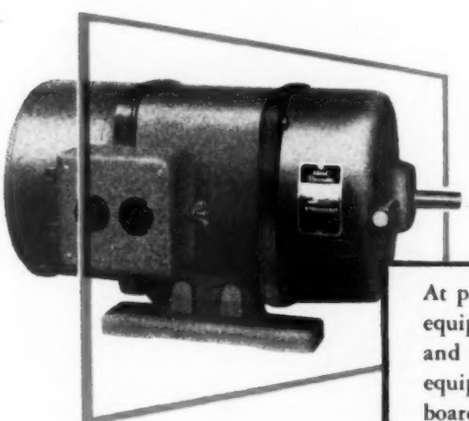
"THERE ARE NO ALPS"

Asked how he was going to get over the Alps, on the eve of his first invasion of Italy, Napoleon flashed back "there are no Alps".

That is, and must be, the spirit of the United Nations . . . of every soldier on the line . . . of every factory worker behind that line.

Lacking the incentive a desperate war generates, Leland engineers and Leland production forces could never have produced the revolutionary types of precision motors that today stand to their credit. Fired by that incentive, there simply "are no Alps".

Hasten the day of surrender when those same engineers and those same workers can adapt their new found techniques to peace time pursuits.



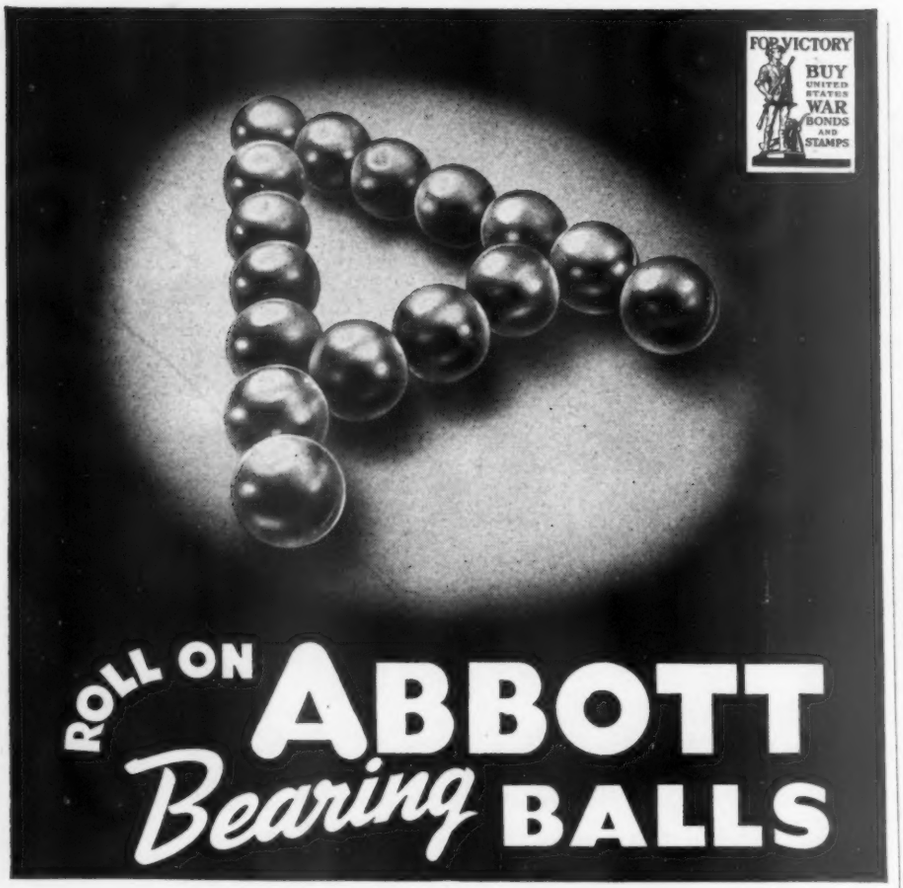
Leland Alternator powered by portable gasoline driven plant for field radio.

At present builders of electrical equipment to power: field radios and phones; airplane testing equipment; electronic devices on board ship, behind the lines and in the air; fire control on anti-aircraft guns; automatic plane pilots; other equipment.

Leland

WAR DUTY MOTORS

THE LELAND ELECTRIC COMPANY • DAYTON, OHIO



INDIVIDUALLY

THEY HAVE STAMINA

ABBOTT BEARING BALLS are manufactured in vast quantities yet each is given the precision inspection of an individual unit to assure stamina.

Individually they carry a definite part of the complete load whether in light or heavy duty assemblies. Collectively they carry the load — as planned.

Metallurgical research, metals to our specifications, rigid inspection plus years of experience — "Yes, ABBOTT BEARING BALLS have STAMINA."

Tell us your requirements. They will be given prompt attention and an estimate of delivery gladly furnished.

ROLL ON ABBOTT Bearing BALLS
THE ABBOTT BALL COMPANY HARTFORD, CONN. U.S.A.

(*Continued from page* 128)

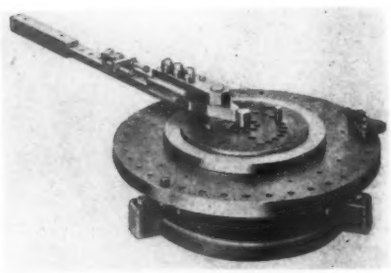
NEW SIX-INCH JOINTER

ACCURATE jointing of 25% to 50% longer stock is said to be permitted by the extra long tables provided with the new 6" jointer offered by Boice - Crane Co., 953 Central Ave., Toledo, Ohio. The fence, which is 35 inches long and 10 inches longer than on most jointers, permits steady guiding and accurate cuts through the full length of even heavy 12 foot doors and sash, it is claimed. Bench and floor types are offered in belted and motor drives.

PLYWOOD BONDING ADHESIVE NO. 4624

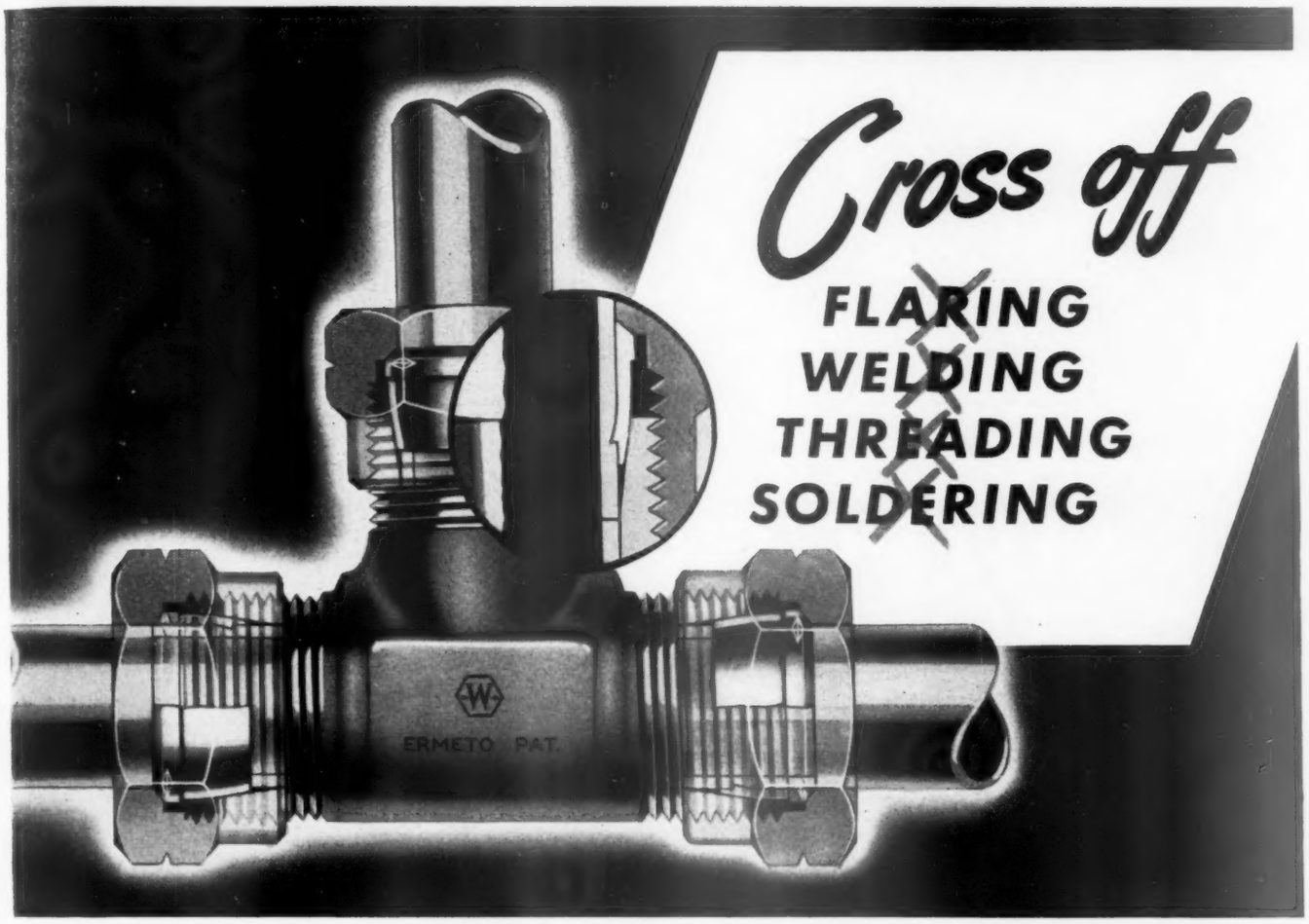
NEW TYPE of adhesive developed by Finishes Division, E. I. du Pont de Nemours & Co., Wilmington, Del., is a new plywood glue that is both thermoplastic and thermosetting. When ply-covered forms are heated under pressure, the adhesive at first becomes fluid and permits the layers of thin wooden strips to move into intimate contact. After twenty minutes, the adhesive sets as a permanently tough, heat-resistant insoluble material. Plywood of this type will withstand being boiled in water for three hours. It is unaffected by high temperatures, and retains its flexibility at low temperatures. The product is available only for military use.

DOUBLE ACTION BENDER



DI-ACRO Bender No. 3, with two-way action, right or left hand mounting or operating, with accuracy guaranteed to tolerance of .001" in all duplicated work, is announced by the O'Neill-Irwin Mfg. Co., Minneapolis 15, Minn. It was developed especially for marine and aircraft work, to meet the demand for a bender capable of forming greater diameters than is possible with the smaller model Di-Acro Benders. It incorporates all of the features of the smaller models. Capacity ½" round cold rolled steel bar, formed cold to 1" radii or larger. Greater capacity of more ductile materials in proportion. Machine will quickly form or duplicate all types of tubing, channel, angle, I-shaped sections, and round, square, flat or any other shaped solid or open cross section materials.

(*Continued on page* 132)



Cross off
FLARING
WELDING
THREADING
SOLDERING

..WITH *Ermeto* SAFETY FITTINGS

Ermeto is your answer to the problem of connecting tubes of any metal without the necessity of flaring, threading, welding or soldering.

Connections made with Ermeto *will hold beyond the burst strength of the tube itself*—and the joints will withstand excessive vibration without losing their tightness.

Ermeto is the fitting you should learn all about for its wide usefulness on hydraulic, oiling, water, gas, fuel and air lines. Write for complete details.

THE WEATHERHEAD COMPANY • Cleveland, Ohio

Branches: Detroit • Los Angeles • New York • St. Louis

Weatherhead

WORLD'S LARGEST PRODUCERS OF FITTINGS AND FLEXIBLE HOSE ASSEMBLIES

PLANTS IN CLEVELAND, OHIO • COLUMBIA CITY, INDIANA • LOS ANGELES, CALIFORNIA • ST. THOMAS, ONTARIO, CANADA

(*Continued from page* 130)

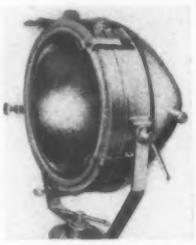
HIGH SPEED HAND SANDER

LIGHT-WEIGHT, high-speed, non-vibrating hand sander, known as model 1000, is announced by the Sundstrand Machine Tool Co., Rockford, Ill. The machine weighs less than 6 lbs., has a speed of 3500 oscillations per minute, and can be equipped with different types of sandpaper attachments for large or small, wide or narrow, flat or curved abraiding surfaces on metal, wood, plastics or composition.

SERIES-MULTIPLE LIGHTING TRANSFORMER

A new series-multiple lighting transformer which provides a simple means of operating a flood light or searchlight from a series lighting circuit, is announced by the Lighting Division, General Electric Co., Schenectady, N. Y. It is designed to operate a standard 115-volt multiple floodlight or search light. It is constructed with built-in film cutout open circuit protective wiring device which eliminates need of mounting and wiring separate protective device.

CONTROLLED BEAM FLOODLIGHT

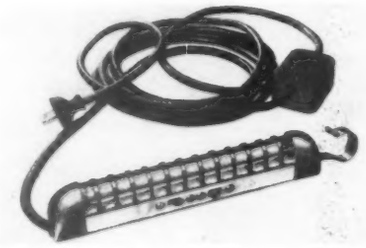


NEW Revere 500 watt floodlight, Navy Specification 98-5452, made by Revere Electric Mfg. Co., 2949 N. Paulina St., Chicago, is said to offer a very efficient means of lighting wherever controlled light sources are needed, to be designed for rugged service, and built to withstand concussion, vibration and exposure to sea atmosphere, etc. Housing is of heavy gage spun steel. Reflector is best quality glass, backed with chemically deposited silver. Silver coating is backed up by coat of silver, and silvered surfaces are protected by a fired enamel backing.

CLEANS AIRCRAFT OIL REGULATORS

Turco Surge Washer has just placed on the market by Turco Products, Inc., Los Angeles and Chicago, who state it is a new and improved machine for thorough cleaning of aircraft oil temperature regulators. It cleans two oil regulators simultaneously. New machine removes flake carbon, metal cuttings and other foreign particles by a surging action which pushes and sucks the cleaning solution through the interiors while regulators are being turned and tumbled.

FLUORESCENT EXTENSION LAMP



FLUORESCENT extension cord unit designed by engineers of Sylvania Electric Products, Inc., Ipswich, Mass., utilizes small 6-watt fluorescent lamp which is said to provide a very adequate amount of cool, glare-free illumination in hard-to-get-at places, along with the characteristic of cool operation of the fluorescent lamp. Protecting grill prevents lamp and socket breakage. Rigid hanging hook is riveted to the end cap. Unit is equipped with manual starting switch, rubber-covered cord, remotely mounted ballast and is featured by light weight. Length of unit 10¼", height 1⅞", width 1 3/16"; operating voltage 110-125 volts, 60 c, a c only.

(*Continued on page* 134)

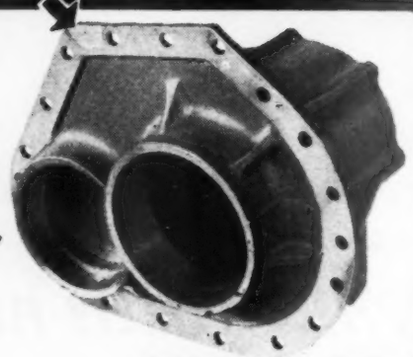
Castolin Eutectic®

EUTECTIC

(Means Lowest Binding Alloy)

LOW TEMPERATURE WELDING

SALVAGING DEFECTIVE ALREADY-MACHINED CASTINGS WITH MACHINABLE EUTECTIC "COLDARC" ALLOY NO. 24

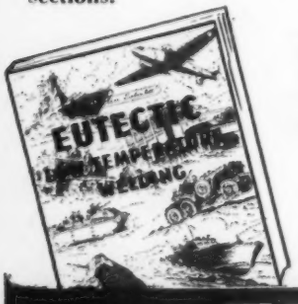


PROBLEM

Salvaging already-machined cast-iron, malleable iron or chrome-nickel alloy steel castings having porous spots or machining errors. . . . When ordinary electrodes were used a hardened fusion line generally resulted. Naturally, this caused great difficulty and time-waste in machining the welded sections.

SOLUTION

Eutectic "Coldarc" Alloy No. 24 (AC-DC). This new kind of electrode can be applied at low heat—without preheating—without deep fusion of the parent metal. Eutectic "Coldarc" Alloy No. 24 gives perfectly *color matching, easily machinable* welds on all ferrous metals. It has been saving hundreds of thousands of dollars in foundries, tool shops, ordnance plants, etc.



Only "Eutectic* Alloys" are the true Low Temperature Welding Alloys that are revolutionizing production welding, maintenance welding and salvaging in war plants throughout the nation. There are 42 specialized rods for every metal and every welding job. Developed and manufactured only by Eutectic Welding Alloys Company.

*Reg. U. S. Pat. Off.

See Demonstration
National Metal Congress
Booth 711 — Chicago — Oct. 18-22

FREE LATEST 36 PAGE WELDING DATA BOOK PH

EUTECTIC
WELDING ALLOYS COMPANY
SOLE MANUFACTURER - CASTOLIN EUTECTIC WELDING ALLOYS
40 WORTH STREET, NEW YORK, 13, N.Y.

Where, really, do new products begin?

In the brain of a busy executive or worker or customer who isn't satisfied with what's available. Sometimes as a spark between two active minds at the shop after hours, at the club after lunch, or at a meeting where men of different types are drawn together by a common air. Wherever new products begin, they almost always spring into first bloom in the form of a few seemingly mysterious hieroglyphics.

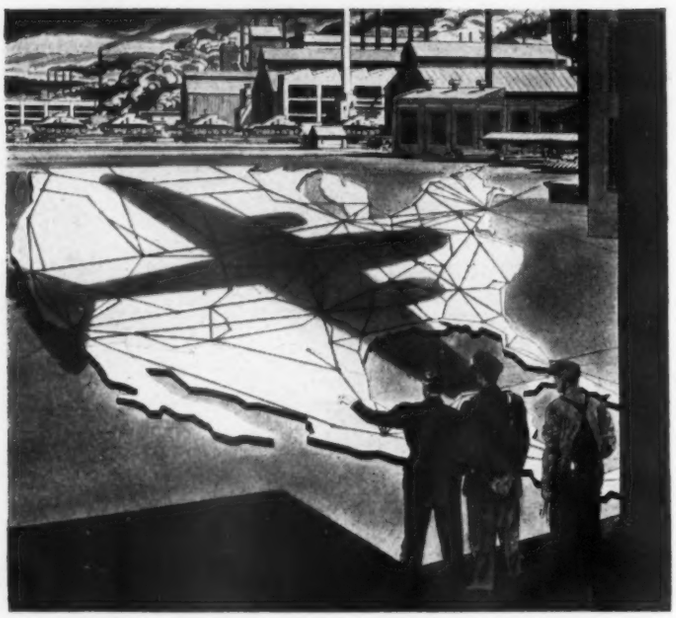
Industry today is bending all its energies toward winning the war through new and better products. But after the war the ingenuity and resourcefulness inherent in all American industry, from bottom to top, will again be directed toward new products, better products, for peacetime living. Better metals, better plastics, better things made from wood and rubber and glass and ceramics, better foods and textiles. And most of them will depend, for their excellence, on *chemicals*.

PITTSBURGH
PLATE GLASS COMPANY
COLUMBIA CHEMICAL DIVISION
GRANT BUILDING . . . . . PITTSBURGH (19), PA.
Chicago · Boston · St. Louis · Pittsburgh · New York
Cincinnati · Cleveland · Minneapolis · Philadelphia · Charlotte

COLUMBIA CHEMICALS

SODA ASH · CAUSTIC SODA · LIQUID CHLORINE · SODIUM BICARBONATE · SILENE (Hydrated Calcium Silicate) · CALCIUM CHLORIDE
SODA BRIQUETTES · MODIFIED SODAS · CAUSTIC ASH · PHOSFLAKE · CALCENE (Precipitated Calcium Carbonate) · CALCIUM HYPOCHLORITE

Get it Fast...specify AIR EXPRESS



IF you want your orders shipped *fastest way*, be sure to specify "ship AIR EXPRESS"—because general instructions such as "urgent" and "rush" may be misinterpreted by the shipper.

And it's especially important to specify AIR EXPRESS if your shipment is vital to a war job, because it saves something like 75% of the hours and days consumed over the next fastest means of shipping. This 3-mile-a-minute service is available direct to more than 350 U.S. cities and to scores of foreign countries.

AIR EXPRESS RATES REDUCED

As a result of the great volume of Air Express traffic created by wartime demands and the increased efficiency developed to satisfy these demands ...Air Express rates within the United States have been substantially reduced, in some instances as much as 12½%, depending on the weight of the shipment and the distance it moves. Consequently, shippers nationwide are now saving an average of 10½% on air cargo costs.

NOTE TO SHIPPERS: *Ship Early*—as soon as shipment is ready—to assure fastest delivery. *Pack Compactly*—to conserve valuable space.

ASK for our new 1943-44 CALENDAR-BLOTTER. Write Dept. PR-11, Railway Express Agency, 230 Park Avenue, New York 17, N. Y.

AIR EXPRESS
Gets there FIRST

Phone RAILWAY EXPRESS AGENCY, AIR EXPRESS DIVISION
Representing the AIRLINES of the United States

(*Continued from page* 132)

COMPOSITE TOOL STEEL

SAVINGS of high speed and other alloy steels ranging from 50% to 80% per tool are said to be possible through use of composite steel made by the Jessop Steel Co., Washington, Pa. It consists of section of alloy steel continuously and permanently bonded to a backing of mild steel. Proportions of alloy section are controllable. Illustration shows new composite tool steel in bar form which has been machined along the entire length to specifications for a forming tool. It is then cut into desired lengths for individual tools. Thus the machining is all done on one piece at the same time. Other Jessop steels produced under exclusive license by this patented method include composite die section steel and stainless clad steel.

SMALL POWERFUL AIR COMPRESSER

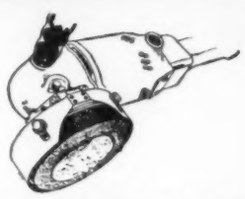
OVERALL size of improved air compressor announced by W. R. Brown Corp., 5720 Armitage Ave., Chicago 39, Ill., is 9½" high and 6" in diameter. It delivers 2 cu. ft. free air per minute at pressures up to 45 lbs., produces vacuums up to 25". Pistons and rings are eliminated, multiple ply diaphragms being used in lieu thereof, which are said to be assurance of clean, oil free air at all times. Compressor will operate in any position and requires ¼ hp input.

MECHANICAL WING JACK

A NEW mechanical wing jack for servicing and repairing airplane landing gears and for other undercarriage work, has been developed by the Duff-Norton Mfg. Co., Pittsburgh, Pa. It is known as the SK-1410, and is designed for easy portability. It is equipped with a collapsible tripod which is quickly folded down for storage in lanes. Jack will carry loads up to 18 tons. Closed height is 44", with rise of 32", extending to 76". Portability is simplified by its 6" diameter wheels.

(*Continued on page* 136)

ABRASIVE DISCS: Full range of grades and grains for sanding or surfacing metal, wood, stone, or tile with any of the three husky B & D Sander models. Universal motor (all standard voltages) with switch, commutator, bearings sealed against dust and dirt.



GRINDING WHEELS: For cleaning, smoothing welded joints, castings, grinding off rivets, bolts, pins, studs, grinding blades in stationary machines, spark-testing steel rods and billets. Saucer or cup wheel types.

WIRE BRUSHES: For removing rust, scale, dirt, paint . . . cleaning castings, tanks, boilers, vats, sheet-metal, soldered joints. Cup and wheel styles, with diameters, for any wire-brushing application.

ROTARY PLANER HEADS: For wood-surfacing and shaping operations formerly done with jack-plane and adz. Rounded face for deep gouging —flat face for surfacing and semi-finishing. Blades interchangeable.

BLACK & DECKER SANDERS
have the "grit" to finish tough war jobs faster

One of the most versatile tools in the complete Black & Decker line is the husky, powered-for-the-job Black & Decker Portable Electric Sander. This tool has the stamina, speed and adaptability to keep going on continuous heavy duty war production and maintenance work . . . for sanding, grinding, wire-brushing, planing operations . . . for *every type of finishing job.* As a large Pennsylvania manufacturer says: "The many different operations possible with a Black & Decker Sander keep it in use *all day, every day.*" That's why production men everywhere count on B & D Sanders to turn out better work *faster!*

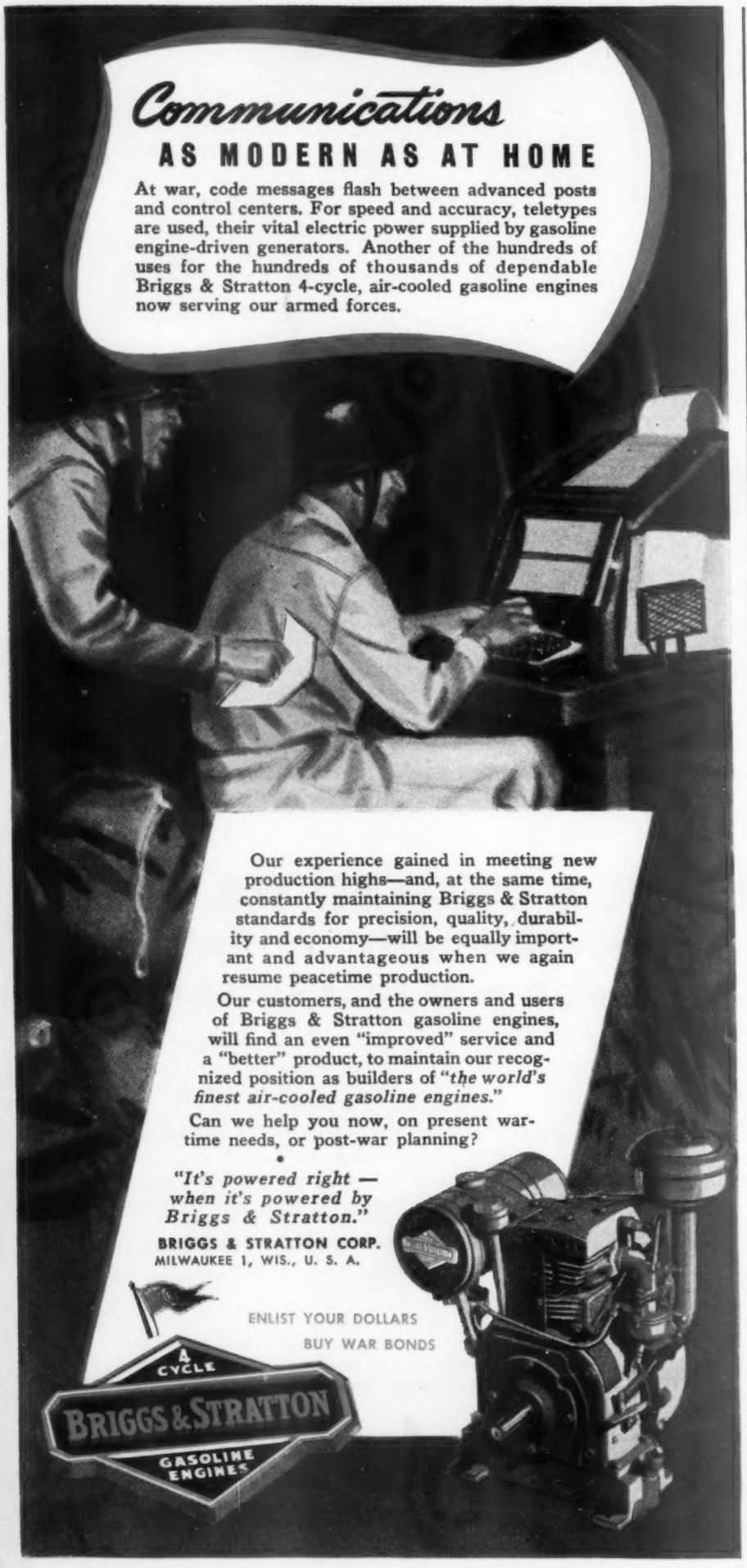
They Count on Black & Decker "PLUS" Services, Too!

War producers are counting on B & D "Plus" Services—26 Factory Branches from coast to coast for fast, expert service on repairs or replacements; convenient interchangeability of parts; nearby Distributors as dependable sources of tool information and supply—for help in war production *now.* These same "plus" services will make it easier for the shift to postwar production after Victory. The Black & Decker Mfg. Co., 764 Penna. Ave., Towson-4, Md.

LEADING DISTRIBUTORS EVERYWHERE SELL

Black & Decker

PORTABLE ELECTRIC TOOLS

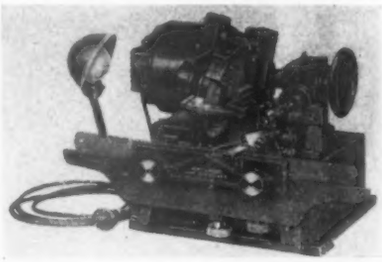

Communications
AS MODERN AS AT HOME
At war, code messages flash between advanced posts and control centers. For speed and accuracy, teletypes are used, their vital electric power supplied by gasoline engine-driven generators. Another of the hundreds of uses for the hundreds of thousands of dependable Briggs & Stratton 4-cycle, air-cooled gasoline engines now serving our armed forces.
Our experience gained in meeting new production highs—and, at the same time, constantly maintaining Briggs & Stratton standards for precision, quality, durability and economy—will be equally important and advantageous when we again resume peacetime production.
Our customers, and the owners and users of Briggs & Stratton gasoline engines, will find an even "improved" service and a "better" product, to maintain our recognized position as builders of "the world's finest air-cooled gasoline engines."
Can we help you now, on present wartime needs, or post-war planning?
"It's powered right — when it's powered by Briggs & Stratton."
BRIGGS & STRATTON CORP.
MILWAUKEE 1, WIS., U. S. A.
ENLIST YOUR DOLLARS
BUY WAR BONDS
4 CYCLE
BRIGGS & STRATTON
GASOLINE ENGINES

(*Continued from page* 134)

REDUCES WELDING FUMES 30 PERCENT

TESTS with No-Spat welding fluid indicate that welding fumes and vaporization of zinc can be materially reduced at least thirty percent by its use, according to the maker, Midland Paint & Varnish Co., Cleveland, Ohio. The tests were made by a competent welder using an oxyacetylene torch on galvanized iron.

AUTOMATIC SAW SHARPENER



AUTOMATIC saw sharpener for quickly reconditioning hack saws, band saws, circular rip saws, metal slitting saws and meat saws, is announced by Howe & Son, Inc., Hinsdale, N. H. The sharpener operates at a speed of 83 teeth a minute which is said to be the maximum consistent with a good sharpening job. It will sharpen hack saws of any length, width or pitch, band saws, any size; circular saws (extra) up to 20″ in diameter, metal or wood rip.

400 AMPERE SELF-COOLED WELDER

NEW TOOL for heavy industry, the Ampac "400" welder, has been introduced by Allis-Chalmers Mfg. Co., Milwaukee, Wis. It is described as an exceptionally sturdy, self-cooled unit. It will handle ¼″ electrodes on basis of 24-hour continuous operation, and ample capacity is provided for rods up to ⅜″ when needed. The unit is adaptable for automatic welding. A range of 50 to 500 amperes is covered by the unit, with power factor correction available. Outstanding features are low idling loss, high power factor, and extremely high efficiency.

THREAD-TOOL GRINDING FIXTURE

THREAD - Tool grinding fixture for grinding 60° and 29° threading tool bits with extreme precision, is announced by Robt. H. Clark Co., 3424 Sunset Boulevard, Los Angeles, Calif. Fixture has no graduated scales or moving parts. Machinist slides bit in holder, tightens set screw and positions fixtures on work table for thread angle desired as indicated

(*Continued on page* 138)

Fiber Sheet Packings

ARMSTRONG'S NO. 841 FIBRATED LEATHER
ARMSTRONG'S NO. 1242 GENERAL-PURPOSE
ARMSTRONG'S NO. 743 NONCORROSIVE

MANY of your sealing problems can be solved with Armstrong's Fiber Sheet Packings.

For sealing oil, water, gasoline, and for other general gasketing purposes wherever temperatures do not exceed 300° F., Armstrong recommends No. 841 Fibrated Leather. Made of live leather fibers and a protein binder, this *extra*-resilient material is excellent for such heavy-duty jobs as sealing transmission and transfer case covers.

Where the superior resilience of No. 841 is not required, Armstrong's No. 1242 provides an economical, sure seal.

A new, noncorrosive material—Armstrong's No. 743—has been developed for use with alloys of aluminum, magnesium, steel, zinc, or copper. It does not corrode these alloys even in the presence of moisture or salt water.

You can get prompt delivery of Armstrong's Fiber Sheet Packings in rolls, sheets, or in gaskets die-cut to your specifications. For free samples—or for information about any of Armstrong's Industrial Products listed below—write Armstrong Cork Company, Industrial Division, 7210 Arch Street, Lancaster, Pennsylvania.

Armstrong's Industrial Products

GASKETS, PACKINGS, SEALS, and **MECHANICAL SPECIALTIES** of Cork, Synthetic Rubber, Cork-and-Synthetic-Rubber Compositions, Cork-and-Rubber Compositions, Fiber-Type Materials, and Rag Felt Papers.

RESILIENT SURFACINGS (for desks, counters, etc.) and **FLOORINGS** (for buses, railway cars, etc.) of Linoleum, Linowall, Linotile (Oil-Bonded), Airoflor, Armoflor, Asphalt Tile, Automat, Cork Tile, Monowall, and Traffex.

TEXTILE MILL SUPPLIES • SHOE MATERIALS • ADHESIVES
GLASS INSULATORS

. . . These are only a few of the more than 360 products of the sixteen plants of the Armstrong Cork Company.

ARMSTRONG CORK COMPANY
INDUSTRIAL DIVISION

THE *Watch Dog* OF PRODUCTION LIGHTING

You can save a lot of time on lighting maintenance by using G.E.'s new fluorescent starter—the "Watch Dog." It doesn't need to be replaced every time a new lamp is inserted; it stays right in the socket. It ends blinking, prolongs lamp and ballast life. For complete details on this really superior starter send the coupon.

Appliance and Merchandise Dept.
Section G1031-77
General Electric Co.
Bridgeport, Conn.

Gentlemen: Please send me further information on the new G-E "Watch Dog" Starter.

Name.....
Company.....
Address.....
City..... State.....

GENERAL ELECTRIC

(*Continued from page* 136)

on the fixture. Fixture is said to save time and eliminate waste. Can also be used with magnetic chuck. It is available in two sizes, each of which takes all tool bits within a ⅛" to ⅝" range.

NEW TYPE CUTTING TOOL

A FIFTY percent saving in high speed tool steel and 3 to 10 times longer life are claimed for new type cutting tools developed by Triangle Tool Co., 2104 E. 22nd St., Cleveland, Ohio. Cutters feature triangular bits which are held rigid by triangular seat in the tool holder. This combination is said to virtually eliminate vibration and tool chatter in the holder. Each chromium plated triangular bit performs three basic cutting operations. Right or left hand cutting is performed with the same bit without additional grinding. Triangular design permits both large and small tool bits to be used in the same holder without special shims or wedges.

CANNERS SYNTHETIC SEALING RINGS

SEALING rings to replace rubber ones, one type being made of Koroseal, a thermoplastic material, and the other a vulcanizable linseed oil compound, have been developed by the B. F. Goodrich Co., Akron, Ohio. Both types have been subjected to rigid test by governmental food and health officials and won their approval as practicable means of accomplishing an emergency wartime job, it is said. Use of the rings has been confined to packing products which do not rate rubber rings, but whose processors obtain a fairly high priority rating.

VIBRATION-VELOCITY METER

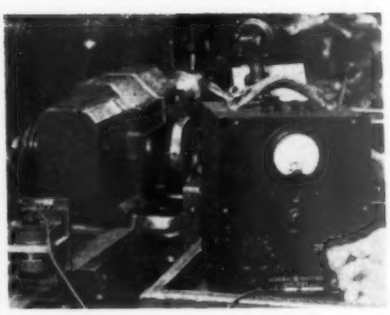


ILLUSTRATION shows General Electric electronic vibration-velocity meter, checking gears in plant of John Bath Co., which it revealed were causing vibration. Consisting of a vibration pick-up unit and electronic amplifier unit, the meter measures vibration velocity and, together with an integrating unit, vibration displacement. The amount of vibration can be analyzed graphically by the use of an oscilloscope fed by the amplifier.

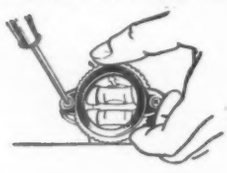
PATENTED TWIN-THREAD SCREW

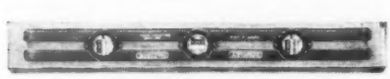
PATENTED Twin-thread screw for wood, plastic and combination assemblies has been introduced by The Blake & Johnson Co., Waterville, Conn. It is said to afford a greater thread pitch so that the driving speed is doubled, though the driving torque is only normal since the twin-thread construction provides the standard number of threads per inch. The screws are self-tapping. Manufacturer states that shorter and fewer screws often can be used as increased thread area provides tighter seating and greater holding power than tapered screws. Screws come in all standard sizes in steel and brass with round, flat and oval heads.

VARIABLE SPEED TEST RIGS

NEW unit in its line of P.I.V. Gear variable speed test rigs, is announced by the Link-Belt Co., 307 No. Michigan Ave., Chicago, Ill. This unit is arranged compactly on a drilled flat steel base to serve as a portable unit that is easily transferred from one location to another for testing vibrators, pumps, instruments, etc. Illustration shows a vertically mounted 2-hp motorized P.I.V. Gear of 6 to 1 over all speed range, connected to a helical gear box having 3 output shaft extensions for testing and a fourth extension on opposite side of box, for connection to a tachometer.

STANLEY RED GLASS LEVEL





WHEN mechanic sets the red fluid glasses on new Stanley RED Glass Level, especially designed for shipbuilders and ship fitters, the use of declivity boards is unnecessary. The level can be adjusted easily to the proper angle of declivity of pitch required.

(*Continued on page* 140)

Wasn't it always done this way?

P&H Zip-Lift Hoists

No, Miss Victory, it wasn't!

You're one of thousands of women workers who'll never know the drudgery of old-fashioned materials handling methods—the fatiguing work this job formerly involved. Your Zip-Lift Hoist was installed to provide the simplest, safest way of lifting heavy parts on and off machine tools. Without it, this would be a back-breaking job—that's sure!

As more and more inexperienced men and women take their places in industry, management is providing a practical way to reduce basic training, to lessen fatigue, and speed production through simpler handling with the P&H Zip-Lift—the only small hoist with full magnetic push-button control. Write for literature.

Available in 250, 500, 1000 and 2000 lbs. capacities. Plugs in on any standard lighting circuit.

ARMY E NAVY

A new star has been added to P&H's award for excellence in war production.

General Offices: 4577 West National Avenue, Milwaukee, Wisconsin

HARNISCHFEGER CORPORATION

HOISTS · WELDING ELECTRODES · MOTORS · P&H · EXCAVATORS · ELECTRIC CRANES · ARC WELDERS

Grinders With
SILVER STREAK
Metal Working
Cloth Belts Much Faster Than Millers, Shapers – Many Plants Find

SILVER STREAK — that's the abrasive belt that lets you switch from millers or shapers to grinders, in order to speed up production on surfacing jobs. Equipped with fine grit SILVER STREAK metal working cloth belts, you can turn out work up to 50% faster, many plants find. You can also maintain tolerances as fine as .0005 with ease.

You can do this because SILVER STREAK Belts are insulated to withstand grinding heats up to 1700°—they keep cutting uniformly and accurately long after ordinary belts have quit. Abrasive Products, Inc., 523 Pearl Street, South Braintree, Mass.

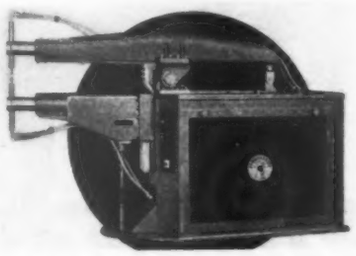
ABRASIVE PRODUCTS INC.
SOUTH BRAINTREE MASSACHUSETTS
JEWELOX • JEWEL EMERY • JEWEL GARNET
JEWELITE • JEWEL FLINT • NEW PROCESS

(*Continued from page* 138)

PROTECTS CONCRETE AGAINST WINTER

CONCRETE highways, Airplane runways, etc. are made highly resistant to severe winter conditions through the addition of about a tablespoon of Vinsol, a pine wood resin, to each sack of cement, product of the Hercules Powder Co., Wilmington, Del. Fractional amounts, ranging from 2½ to 4½ parts in 10,000 of the resin are added by cement manufacturers to the clinker during grinding. Test roads in hard-winter states show that while untreated concrete has deteriorated due to winter conditions, resin-treated sections remain unaffected. Vinsol-treated portland cement is recognized in the specifications of the A.S.T.M., and by the Federal government. It is being used extensively by the U. S. Corps of Engineers. The Ohio State Highway Department has specified that Vinsol must be incorporated in concrete mixtures for road construction in Ohio.

ROCKER ARM WELDER



ROCKER arm welder designed specifically for condensor-discharge welding of aluminum sheet is announced by Progressive Welder Co., Detroit 12, Mich. It is designed to handle any combination of two thicknesses of 24-ST Alclad, between 0.016 and 0.081 inches at overall production rates of between 1000 and 2000 spots per hour including point dressing time, etc. Also, machine is designed for the use, if desired, of refrigerated electrodes, insulated piping, etc., being optional at slight extra cost with the machine for this purpose.

PORTABLE PRODUCTION GRINDERS

DESIGNED for use in foundry work and other applications where tools receive rough handling and are subject to abuse, two new portable pneumatic tools with malleable motor housings and malleable throttle heads have been announced by the Aro Equipment Corp., Bryan, Ohio. The grinders have 2″ wheel capacity, weigh approximately 4 pounds, and have a speed range of 15,000 to 18,000 r.p.m. Though intended for 2″ wheel grinding and cleaning on castings, the tools are said to be excellent for use with rotary file burrs on aluminum and magnesium.

Aircraft Bolts by Cleveland

AN Hex Head Bolts with drilled heads or drilled shanks produced by the Kaufman Process on Bolt Makers which are well adapted to manufacturing parts to Army and Navy specifications. Production quantities, high standards of quality and strength, are available.

Write for data.

THE CLEVELAND CAP SCREW COMPANY
Aircraft Parts Division
2917 East 79th Street • Cleveland 4, Ohio

Cleveland Aircraft Bolts

Specialists for 26 years in Headed and Threaded Products

Accuracy: + or – 6 inches

..How "*See-ability*" is helping skilled workmen produce range finders of amazing accuracy for the U. S. Army

They said it couldn't be done!

No sir, no one could turn out range finders, eyes for our army's artillery—as accurate as it wanted them—*as fast as it must have them!*

But that was a long while ago—before Pearl Harbor!

Today, Industry is in quantity production on range finders almost *absolute* in accuracy.

Today, thanks to American *know-how,* gunners all over the world, smack their targets right on the nose!

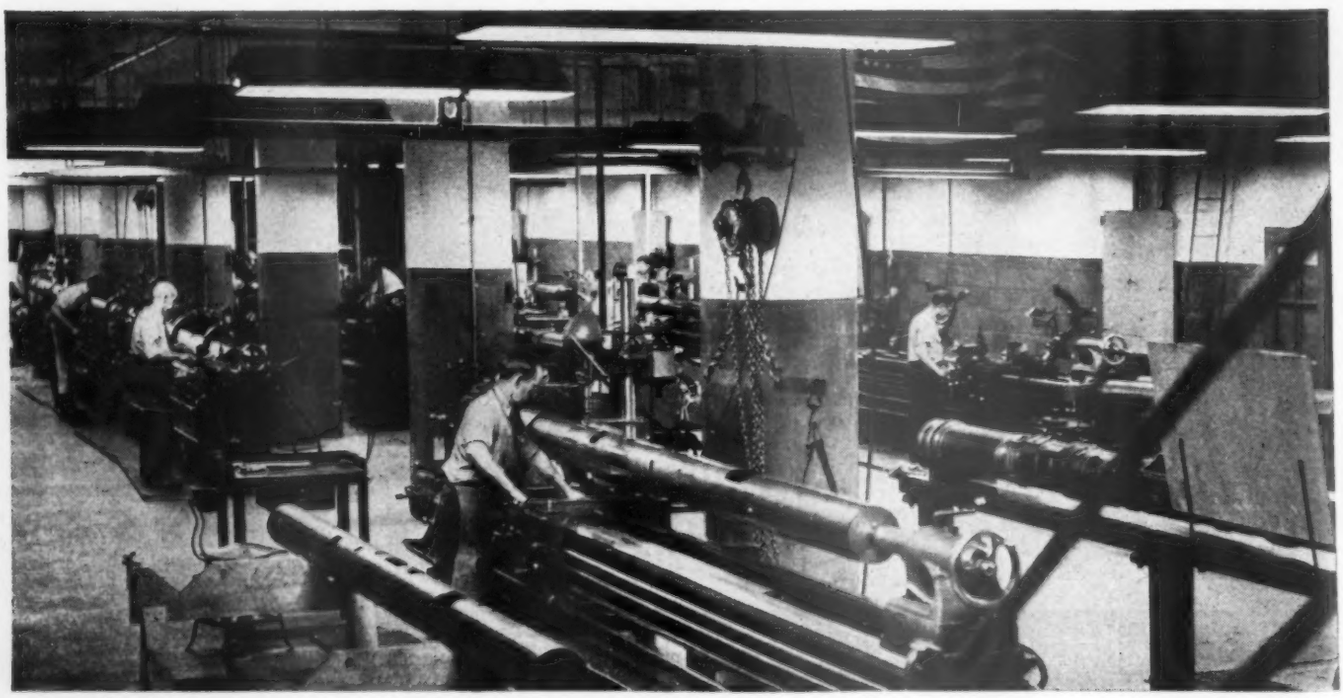
"See-ability" through better, more scientific, lighting helps make this miracle possible. It is helping make high speed precision machine work a routine matter. It is helping bring well-nigh superhuman skill to human eyes and fingers.

That is why millions of Westinghouse Mazda Lamps are ear-marked to bring "See-ability" to this and other vital war work.

• • •

You can help. Lamps are made from tungsten, nickel, copper and other critical materials. Help make these supplies go farther by conserving lamps. For practical suggestions, write for booklet "See-ability for Indoor Eyes." Westinghouse Electric & Manufacturing Company, Bloomfield, N. J. *Plants in 25 cities . . . offices everywhere.*

KEEP YOUR DOLLARS FIGHTING . . . BUY WAR BONDS



at better than 5,000 yards!

Westinghouse

MAZDA LAMPS

FOR BETTER "SEE-ABILITY"

HOMOGENEOUS FIBER WALLBOARD STANDARD

Recommended Commercial Standard for Homogeneous Fiber Wall Board, TS-3542, is being sent to producers, distributors and users, for approval, by J. W. Medley, Division of Trade Standards, National Bureau of Standards, Washington, D. C.

MONSANTO ISSUES HANDBOOK FOR WOMEN EMPLOYEES

Practical handbook for women employees which explains "What is expected of you and what you may expect of Monsanto", issued by the Personnel Section, Monsanto Chemical Co., St. Louis, Mo., deals with the subjects of health, diet, general well being, safety and lifting. Its style is comprehensive, friendly and effective.

ELECTRONIC DRIVE PROVIDES 20 to 1 SPEED RANGE

An adjustable-speed electronic motor drive has been developed by Westinghouse Electric & Mfg. Co. which it is said can be used in any industry on applications that require constant preset speed at varying loads over a 20 to 1 speed range and smooth, automatic acceleration and deceleration. Flexibility of a direct-current motor drive with an alternating current supply is obtained as the incoming a-c power is converted by grid-controlled rectifier tubes and supplies to the armature and field of the d-c motor. This electronic drive provides constant torque for all speeds up to the base speed of the motor and constant horsepower above base speed.

HOW TO KNOW VALVES

Valves chart printed on heavy cardboard for posting purposes, entitled "How to Know Valves", is designed to take the mystery out of valves for new maintenance workers. The chart breaks down valves into four basic types, shows simple, visual line illustrations, and explains what service the four types of valves perform, how they operate, and where valves are used. Copies may be obtained from Department S. P., Reading-Pratt & Cady Division of American Chain & Cable Co., Inc., Bridgeport, Conn. Mention how many you need.

MANY TIMES STRONGER THAN ORDINARY PORCELAINS

Prestite is the name of a new type porcelain developed by Eugene H. Fischer, Westinghouse engineer, which is said to be many times stronger than earlier porcelains, and which can easily be shaped into intricate designs. It is a mixture of feldspar, flint and clay of low water content moulded in steel dies under high pressure. Engineer Fischer was awarded the Westinghouse Order of Merit chiefly for his work in developing the product.

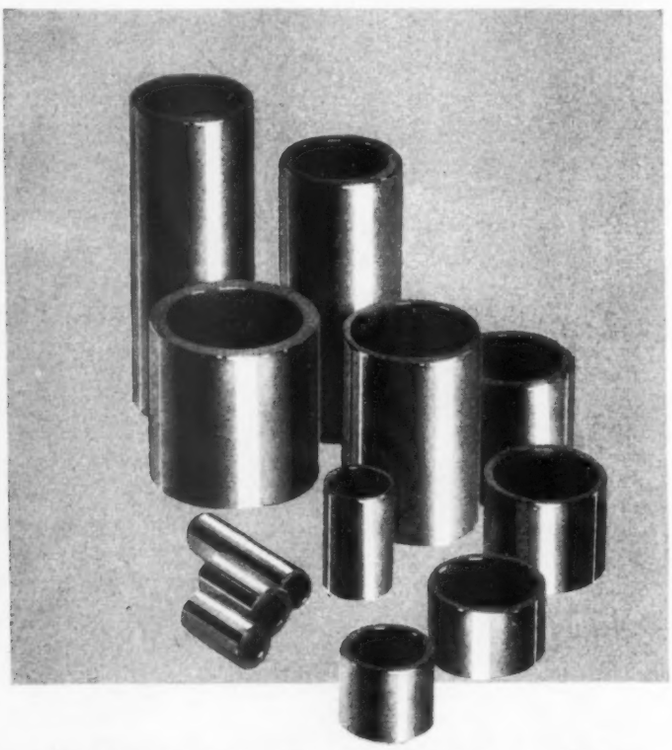
DEVELOP METHOD OF SPINNING ASBESTOS YARNS

A method of spinning asbestos fibers into fine yarns has been developed by the United States Rubber Company. Fabrics made from these yarns, known as Asbeston, are extremely lightweight. Fire-fighting suits made of it weigh only one-half as much as suits of conventional asbestos fabrics. The company is planning to increase its production of the yarns fifty percent. They are now used principally in war products.

NEW SEALING TAPES

The Paint Division of the Pittsburgh Plate Glass Company, Pittsburgh, Pa., has developed several sealing tapes to help speed the production of warplanes. Trade names of these products are Fabseal, Chromeseal, and Stratoseal. They are made in fifty-foot rolls in widths varying from one-half inch to 24 inches. Fabseal is particularly designed for use as a gasket in the construction of flying boat hulls, gas and oil tanks where internal or external pressures are encountered under constant vibration or sudden impact. It is an impregnated fabric with an interleaf separating the fabric layers. It may be applied to any metal or wood section. Chromeseal is a solid ribbon of compound with no fabric as

(*Continued on page* 147)



STANDARDIZE

save time . . . save money

• The trend in manufacturing circles today is toward STANDARDIZATION . . . away from specials. Most concerns found that a comparison of their requirements with the Johnson Bronze list of GENERAL PURPOSE Bronze Bearings revealed the fact that over 90% could be secured FROM STOCK! Very often, a slight change in size or tolerance enabled them to secure all the bearings without delay.

• Why not check your bearing sizes today? Write for a copy of our new catalogue. It lists more than 850 stock sizes for immediate installation. Oil grooves, slots and holes can be quickly, economically added. You will save both time and money — with STANDARDIZATION.

JOHNSON BRONZE
SLEEVE BEARING HEADQUARTERS
450 S. MILL STREET NEW CASTLE, PA.

Saving PRICELESS SECONDS . . . STRAIGHT DOWN THE LINE!

On every hand tool operation . . . *check and double check* . . . to make sure that the *right* tool, the *fastest* tool, is on the job. Worn tools, "slow tools" . . . tools poorly adapted to each specific application . . . waste time, skill, energy.

Straight down thousands of busy production and assembly lines Snap-on tools are the stand-out choice for speed, adaptability, accuracy. Their ease of application, solid grip and powerful leverage save time and energy, help promote a smooth, uninterrupted flow of work.

Eliminate the "bottle neckers" . . . replace with Snap-ons. 3000 modern Snap-on tools offer a wide selection for production and maintenance needs. Distributed through 35 factory branches located in key production centers. Write for catalog and address of nearest branch.

SNAP-ON TOOLS CORPORATION
8048-K 28th Avenue KENOSHA, WIS.

Snap-on Tools
THE CHOICE OF BETTER MECHANICS

"THE GRASS IS Always GREENER . . !"

Need we finish it? . . . "on the other side of the fence."

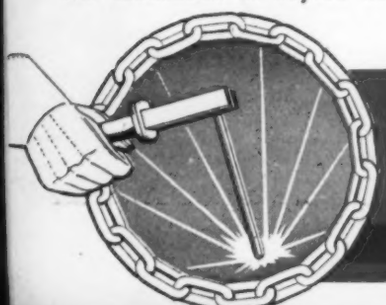
Here at The McKay Company we have no illusions about the very human tendency of most individuals to "shop around" a little in their quest for something better. And because of that deeply ingrained habit The McKay Company and the McKay line of products has grown in importance and reputation and usefulness.

For thousands of buyers who came to "nibble" have stayed to "graze" . . and other thousands, tempted elsewhere for awhile, have returned to the safe, dependable source of recurring satisfactory supply.

If it's stainless or mild steel Welding Electrodes or Commercial Chain you need (Tire Chains, too, although they may not be in your line), the reputation of these McKay products is sustained by 60 years of dependable service to industry.

Try them sometime!

Sales Offices: York, Pa.



THE McKAY COMPANY
PITTSBURGH, PA.

WELDING ELECTRODES . . . COMMERCIAL CHAINS . . . TIRE CHAINS

QUALITY
UNSURPASSED

SINCE 1854

Catering to the needs of an exacting clientele — and that means — quality in materials, workmanship, packaging and service.

Clark Bros.

can supply — standard or special fasteners in the form of bolts, nuts, screws or rivets.

May we quote you on your next order?

BOLTS·NUTS
RIVETS
SCREWS

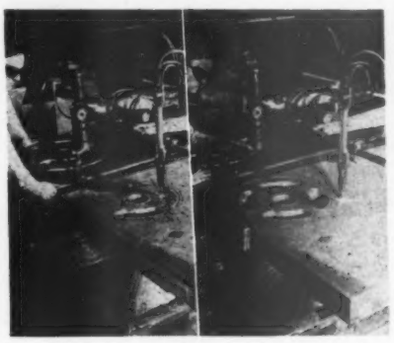
CLARK BROS BOLT CO.
MILLDALE, CONN.

(*Continued from page* 144)

part of its composition, and it is more flexible than Fabseal. It is suited as a gasket material between riveted or bolted surfaces of integral fuel tanks, etc., as well as a seal for plastic enclosures and glass cockpit framing. It can be molded by hand to conform to almost any angle, curve or contour. Stratoseal, designed for the sealing of the cabins of stratosphere-flying planes, remains flexible in temperatures ranging from 70 degrees below zero to 150 degrees above zero.

FLAME CUTTING HEAVY GEAR BLANKS

When a Long Island builder of derricks and hoists needed a small quantity of gears for the driving mechanism of several large cranes, he utilized flame cutting as the quickest method of making gear blanks of the size needed. The gear blanks, 4 inches thick and 20 inches diameter, are cut from a large slab of



Flame Cutting Gear Blanks

medium carbon steel, then sent to an outside shop for machining of the gear teeth. Five piercing starts are required on each gear, to provide four lightening holes and the center shaft opening. Piercing is done by first routing out shallow craters in the center of each waste section with a hand cutting torch, then burring these holes completely through with an oxygen lance. Cutting of the blank then proceeds, using an Airco Planograph with a magnetic tracing head following the outlines of a steel template.

As shown in the photographs the quality of cut is extremely good. The 4-inch deep cuts are made with a Style 124 No. 6 tip, operating at 55 lbs. oxygen pressure and 3 lbs. acetylene. Speed of cutting is 7 inches per minute.

PAINT "CANS" MADE OF WRAPPING PAPER

Employing kraft wrapping paper and non-critical materials in place of the tin-plated steel formerly used, the Sherwin-Williams Company, is now saving tons of steel daily and getting a highly-satisfactory paint container through the use of a new continuous can-winding process perfected by the company's own engineers. The can-making plant, which converts rolls of ordinary wrapping paper into unbreakable, leak-proof cans, was equipped with second-hand machines and "home-

(*Continued on page* 148)

Manufacturers of metal stampings facing problems in the feeding of coiled strip stock to punch presses will find that Wittek Automatic Roll Feeds and Reel Stands conserve man-hours and achieve new high production levels.

Providing an improved and simplified method of punch press operation, Wittek Automatic Roll Feeds and Reel Stands insure rapid, safe and accurate feeding under all conditions. Made in four different types to meet all automatic feeding requirements. Write for complete details. Wittek Manufacturing Co., 4305-15 West 24th Place, Chicago, Ill.

Wittek Hose Clamps for over twenty years identified with the Automotive and Aviation industries, are noted for their permanent leakproof hose connections. For original equipment and replacement.

ARMY E NAVY

WITTEK MANUFACTURING CO.
4305-15 W. 24th Pl., Chicago

So Can You

HAVE BETTER METAL CUTTING RESULTS

BUY GRIFFIN

Now when every minute counts, the men who cut metal are finding GRIFFIN BLADES are the answer for results.

Their consistently uniform performance has made GRIFFIN the "buy word" among mechanics who appreciate dependability. The next time you order, specify GRIFFIN. Distributors everywhere have the right GRIFFIN BLADE for every metal cutting job.

Specify and insist on them.

JOHN H. GRAHAM & CO. INC.

General Sales Agent

105 Duane Street • New York City

Made by G. W. GRIFFIN CO., Franklin, N. H.

Specify GRIFFIN Hack Saw Blades

(*Continued from page* 147)

made" conveyor lines in an unused portion of the company's Chicago factory.

Literally miles of paper can bodies are automatically formed daily on revolving mandrels in the new process, which demonstrates that German scientists have no monopoly on ingenious "ersatz" processes and materials.

BOOTS ALL BUNA S

The boots in the accompanying illustration are of synthetic rubber. They are being made for essential war and industrial use in a Connecticut plant of United

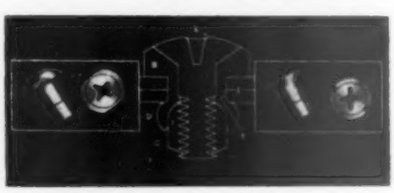
States Rubber Company. These boots are entirely buna S except for the rubber cement necessary to make them adhere until they are vulcanized. Officials of the company are enthusiastic over the way they pass rigid tests.

MAKING FOR A "SWEET" GAME

Postwar golf balls may have centers of cane sugar inside a core of rubber, according to engineers of The B. F. Goodrich Company, Akron, Ohio. Dr. Richard A. Crawford, a company research scientist, has developed a new and improved manufacturing method which incorporates this revolutionary feature.

Golf balls with liquid centers are superior to those having solid cores, golf authorities agree. The new center which may include sugar and water will be permanently liquid even at low temperatures, the inventor declares.

NEW BLIND RIVET



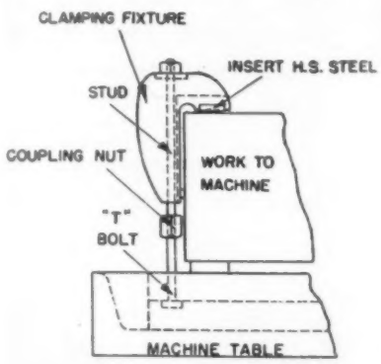
Development of a new blind rivet that is said to have the simplicity and reliability of a common screw and nut, is announced by the Pacific Railway Equipment Co., 960 E. 61st St., Los Angeles, Calif. The name of the new rivet is Preco. Manufacturer states that rivet is ready at all times for immediate installation and requires no special care as to storage, handling and use. Where power is not available ordinary hand ratchet or power screw driver can be used for it application. The rivet is available in two types—the "raised" head type, and the "flush" head type, each of which comes in three diameters—1/8", 5/32", and 3/16" with grip lengths covering normal range. Manufacturer states that shear standard of Preco rivet falls within allowable range of A D rivets.

BIG INCREASE IN USE OF GLASS TANKS

Dozens of industries are turning to glass tanks or vats for various industrial uses, according to R. B. Tucker, a director of the Pittsburgh Plate Glass Company, and also relining existent units with glass. Mr. Tucker declares that glass tanks are in no way to be considered as temporary; that they are made strong enough and resistant to quick temperature changes by a special tempering process which assures tanks that are permanent. It is pointed out that glass is impervious to acids, alkalis, chemicals and liquids of almost any type. Also, they are non-absorptive and non-porous, and present a hard, level, sanitary surface requiring practically no maintenance. Standard plate glass tanks are built of opaque Carrara structural glass or of clear plate glass where transparency is desirable. A special crew of installers is available for the relining of tanks previously lined with copper, rubber or other materials now curtailed by war demands.

ARE YOU BUYING CLAMPS?

The old system of clamping work to machine tables by means of "U" clamps has been displaced in some applications at General Electric's Schenectady Works as the result of a clamping fixture sug-



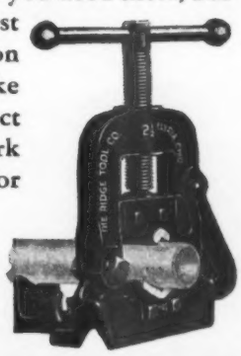
gested by one of the Company's workers which has many advantages.

The fixture is a positive clamp with an inserted hardened steel jaw to prevent slipping. The "T" bolt is fitted with a coupling nut so that by varying the length of the stud used, the clamp may be employed on varying thicknesses of work. Since but a negligible amount of space is needed for fitting the "T" bolt into the table, its full length can be utilized. Previously, blocks to support the "U" clamps took up considerable working space.

The clamping fixture is being used successfully on boring mills, planers, and milling machines—and the old "U" clamp supports have gone into the scrap pile.

Room to Work on this RIDGID TRI-STAND

THIS Tri-Stand Vise is really a portable workbench—legs fold in and chain for easy carrying right where you want it. Unusually large tray gives plenty of room for oil can and dope pot, handy tool slots, efficient 3-size pipe bender, pipe support—and it has a ceiling brace screw and screw-down feet if you need them, but it's remarkably well balanced for most work. Strong malleable construction makes it durable. Either chain or yoke vise, with LonGrip jaws to protect polished pipe. For time and work saving, ask your Supply House for the RIDGID Tri-Stand.



9 Essential RIDGID Vises in 23 Sizes. . . . Yoke and Chain Vises in bench, kit, post and stand patterns, all popular sizes. Tool-steel jaws and strong malleable frames.

Ready to thread 1", 1¼", 1½" or 2" pipe *in 10 Seconds*

SELF-CONTAINED No. 65R RIDGID WITH HIGH-SPEED STEEL DIES

DON'T fool with 4 sets of chaser dies every time you want to thread a different size pipe—1 set that stays in this No. 65R gives you micrometer perfect threads on 4 sizes of pipe, 1" to 2", with a simple 10 second adjustment. Instant mistake-proof workholder, too—and no bushings to bother with. Try this smooth rugged steel-and-malleable tool and you'll understand its wide popularity. Ask your Supply House.

No. 65R is made also in 2 handle ratchet model; also as plain die stock.

Buy RIDGID Pipe Tools at Supply Houses Everywhere

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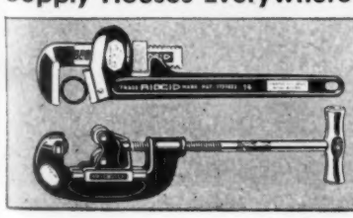
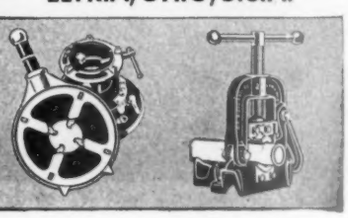


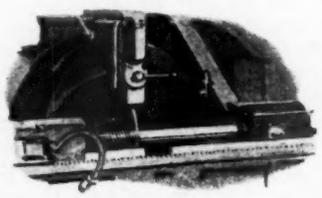
Fast-Working Tools for War. . . and the Busy Peace that's Coming



To get *MORE* from

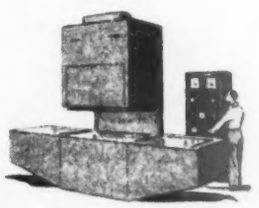
Welding armor plate for tank hulls in the Detroit plant of a large steel fabricating company. Use of a-c equipment has stepped up welding speed 10 per cent—and improved the shock resistance of welded seams.

your *Available Man-hours*

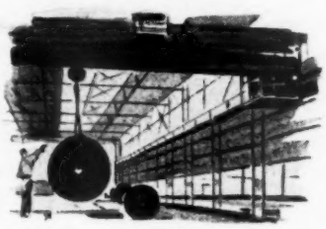


HANDLING. One plant has markedly increased the output of assembly crews by installation of cranes equipped with a new G-E hoist drive. The drive, operating on a-c, permits faster maneuvering of light loads, assures greater safety and better control in spotting heavy loads.

COOLING. For close-tolerance cutting of screw threads, a manufacturer had turned to grinding. Production also proved faster—but the grinding wheels required periodic stops to cool off. Now, G-E refrigeration cools the cutting emulsion to permit continuous operation, has substantially boosted the per-man-hour output.



INSPECTING. At another plant X-ray examination of important aluminum castings was essential. But how to handle the tremendous volume with the limited man power available? The solution was G-E semi-automatic X-ray machines. At this plant today, mass inspection is geared right in with mass-production schedules.



HEATING. In an important subcontractor's plant, torch-brazing of small parts took about three minutes per unit. Skilled operators were a *must*. Now, with G-E electronic heaters, girls do the job in 20 seconds, or less—and output per shift has jumped enormously.

WELDING. On a variety of jobs, welding speeds have been increased 15 to 30 per cent—by changing from d-c to General Electric *a-c* welders. In horizontal welding, for example, one large shop gets 35 per cent more footage per man-hour, and saves power, electrodes, and maintenance.

ROLLING. Output from a huge cold-strip steel mill has been boosted 150 tons per shift—40 per cent above the highest previous level. Crews are no larger than before. Back of this startling production increase is G.E.'s versatile new tool—the amplidyne.

Refrigeration, X rays, electronic heating, new welding methods, amplidynes—these are but a few of the production aids offered by G.E. to help you make war-scarce man-hours go further—count for more. G-E engineers experienced in your specific field will help you apply them. You can get this assistance quickly through your local G-E office. *General Electric, Schenectady, N. Y.*

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BUY WAR BONDS

Among the ASSOCIATIONS

CANADIAN ASSOCIATIONS HOLD ANNUAL BUSINESS CONFERENCE

The Council of Canadian Purchasing Agents' Association held its Nineteenth annual business conference, Saturday September 25 at the Royal York Hotel, Toronto, Ont. The days program was well filled with good speakers who offered a well diversified assortment of interesting subject matter, among them being the Hon. George A. Drew, Prime Minister of Ontario, and Ben R. Newbery, president of the National Association of Purchasing Agents, Purchasing Agent, Lone Star Gas Co., Dallas, Texas.

The morning session, chairman, A. G. Sullivan, president, Purchasing Agents Association of Montreal, Purchasing Agent, The Foundation Co. of Canada Ltd., Montreal, featured six speakers, as follows:

L. Tolson, president, Council of Canadian Purchasing Agents Associations, Purchasing Agent, MacLean Publishing Co. Ltd., Toronto, address of welcome.

C. R. Burridge, president, Essex-Kent Purchasing Agents Association, Purchasing Agent, Backstay Standard Co. Ltd., Windsor; remarks.

Ben. R. Newbery, president N. A. P. A.

L. F. Winchell, vice president and general manager, Hinde & Dauch Paper Co. of Canada Ltd., subject, "Some Post War Thinking".

D. B. McCoy, general sales manager, The Steel Co. of Canada Ltd., Hamilton, Ont., subject, "Wartime Shipbuilding".

B. A. Trestrail, co-ordinator of personnel, John Inglis Co. Ltd., subject, "Jack Canuck the Crusader".

Luncheon meeting; chairman, J. D. Mortan, president, the Purchasing Agents Association of Toronto, Purchasing Agents, Viceroy Manufacturing Co. Ltd., Toronto.

Address by Hon. Geo. A. Drew, Prime Minister of Ontario.

The afternoon session was under the chairmanship of H. B. Coleman, president, Purchasing Agents' Association of Hamilton District, Purchasing Agent, Canada Machinery Corp. Ltd., Galt., Ont. The speakers were as follows:

G. A. Renard, Executive Secretary-Treasurer, N. A. P. A., New York, subject, "From One P. A. to Another".

J. G. Clark, Store Superintendent and Director, The Robert Simpson Co. Ltd., Toronto, Ont., subject, "The Post War Employment Situation".

Dr. Ivan R. McHaffie, manager, research and development, Canadian National Railways, Montreal, subject. "The Future of the Railways".

The session was concluded with remarks by Harold I. Nelson, immediate past-president, Council of Canadian Purchasing Agents Associations, Purchasing Agent, Quebec North Shore Paper Co., Montreal.

The dinner meeting was in charge of Chairman George McDowell, Conference General Chairman, Purchasing Agent, The Robert Simpson Co. Ltd., Toronto. The principal speaker was Ben R. Newbery, President of the National Association of Purchasing Agents. There was also an interesting talk by squadron leader J. D. Parks on "Re-born to be Air Borne".

TALK ON CIVILIAN PRODUCTION AT WASHINGTON, D. C.

A. C. Hill, Jr., Deputy Vice Chairman for Civilian Requirements, War Production Board, was the guest speaker at the first fall dinner meeting of the Association of Purchasing Agents of Washington, D. C., held in the Mayflower Hotel September 14. Mr. Hill outlined the process of transition from civilian to war production, and stated that the Office of Civilian Requirements is giving careful consideration to the needs of the civilian population by reason of obsolescence and maintenance of consumer durable goods. He cautioned, however, that allocations of raw materials for this purpose depend upon the over-all supply picture and the relative needs of all claimant agencies.

The meeting was presided over by Clifton E. Mack, president, who is Director of Procurement, U. S. Treasury Department. The applications of five new members were approved, as follows: C. Warner McVicar, Procurement Specialist, Contract Clearance Section, O. P. & M., Navy Department; John J. Stapleton, Purchasing Agent, Air Track Manufacturing Co.; Andrew William Alexander, Buyer, Engineer and Research Corporation; Grey Leslie, Chief, Equipment & Supply Branch, Department of State; and, Leslie A. Jones, Consultant, Treasury Procurement Division. Mr. Jones is a past-president of the National Association of Purchasing Agents.

LOS ANGELES ASSOCIATION STARTS ACTIVE SEASON

Following a 5:00 P. M. priorities forum with Horace Lawrence of the Southern Gas Company presiding, the inital fall dinner meeting of the Purchasing Agents Association on September 9 was featured by an address by Dr. Elam J. Anderson. President, University of Redlands, on "The Pacific of Tomorrow". In addition. National Director E. W. Beck, General Petroleum Corporation who has been stationed in Washington, discussed current highlights from the Nation's Capitol. The members also enjoyed an added feature in the form of a fine musical program.

October 1st the association held its annual ladies night, a traditional party for members, their wives and friends, in the Blossom Room of the Hollywood-Roosevelt Hotel. Al Tietjen was chairman of this affair which included a fine dinner, excellent dance music, and a sparkling floor show. The ladies had the excitement of participating in a free drawing for War Bonds.

CINCINNATI INSTALLS ROBERT DUERLER AS PRESIDENT

Robert Duerler, Purchasing Agent, Cincinnati Milling Machine Co., Cincinnati, Ohio, was installed as president of the Cincinnati Association of Purchaing Agents, September 7 at a meeting at the Clovernook Country Club. The rest of the new officers are as follows: First vice president, Lee Clayton, Philip Carey Co.; Second vice president, Al Bader, Jos. T. Ryerson & Sons Co.; Secretary, Gilbert Riches, Andrews Steel Co.; Treasurer, Jac Breese, Breese Brothers Co.; Trustees, Bernard Toerner, Mutual Manufacturing & Supply Co.; George De Silver, Pickering Hardware Company. National Director, Louis G. Pochat, Procter & Gamble Company. Speaker at the evening dinner meeting was Waite Hoyt, sports commentator of broadcasting station WKRC.

The September 14 meeting of the association under the Direction of Ed Cordes, chairman of the educational committee, was devoted to a discussion of the controlled materials plan and priorities.

KALAMAZOO PURCHASING AGENTS HAVE BUSY EVENING

The September 15 meeting of the Kalamazoo Valley Association of Purchasing Agents, held in the Columbia Hotel September 15, was featured by three interesting talks. Charles Kindleberger discussed "Business Conditions in the Post War Period", Frank Brown made a talk on "Kalamazoo Valley Association of Purchasing Agents", and Gerald R. Smith, Fourth District National Vice President, Fort Wayne, Ind., addressed the meeting on "Purchasing Agents and the National Association". In addition, five-minute commodity discussions as follows: "Copper. What the Future Holds for Electricians", R. H. Aldrich, Allen Electric & Equipment Co.; "Titanium", John Stroud, Lee Paper Co.; "Pipe, Valves and Fittings", Arthur Rowan, Bond Supply Co.; "Rubber", G. V.

(*Continued on page* 154)

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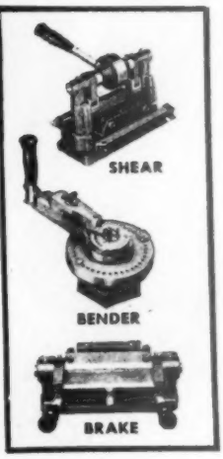

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Cathey, B. F. Goodrich Company. The September 2nd meeting of the association was also devoted to a discussion of commodities, the subjects being waste paper, corrugated containers, coal, and lumber, man Wayne E. Crotty.

CHICAGO PAPER GROUP HOLDS SPECIAL MEETING

Major James d'A. Clark of the Subsistence Research Laboratory, U.S.Q.M. Corps spoke on "Packaging Subsistence and Other Material for Overseas Shipments" at a special meeting of the Paper Group of the Purchasing Agents Association of Chicago, which was held in the Palmer House, Chicago, September 23, in conjunction with the Maritime Conference on Technical Association of the Pulp & Paper Industry. The Purchasing Agents and their department heads in charge of shipping and packaging were given the opportunity to visit the Army & Navy exhibit on war-time packaging, and to get advice from Army and Navy personnel on overseas packing problems. The meeting was under the direction of F. W. Sinsabaugh, chairman of the Paper Group.

At the regular monthly meeting held September 9 in the Hotel Sherman, Dr. Albert Parry who was born and reared in Rostov-on-the-Don, and is an authority on Russian economics, warfare and politics, was the guest speaker, his subject being "Russia".

In addition to the paper group meeting, other group meetings held during September were as follows: Metal Manufacturers Group, (Production Products); Metal Manufacturers Group, (Heavy Goods); Jobbing Metal Mfg. Group; General Manufacturing Group; Food Processing Group; Distributors Group; Warehouse Group; and Foundry Group. Robert L. Lempke is General Chairman of Group Meetings.

DISCUSS WARTIME SUBJECTS AT SEATTLE MEETING

Industrial, commercial and governmental purchasing men from all points in Western Washington gathered at the Washington Athletic Club in Seattle, Wash., Thursday evening, September 9, for the first fall meeting of the Purchasing Agents Association of Washington. Charles V. Tinker, president of the state association presided. The program was arranged by First Vice President D. P. Brewer, the first speaker being Frank West, president, Preservative Paint Co. and Manufacturers Association of Washington, who spoke on "Manning our War Plants". Mr. West is also chairman of the War Price and Ration Board. Wm. F. Schultz, chairman of the Discussions committee, introduced two other speakers, namely: C. L. Burton, Purchasing Agent, Guy F. Atkinson Co., who spoke on "Bases for Bombing from Great Britain", and Silas Rich, Purchasing Agent, Board of Education, whose subject was "Seattle School System's Contribution to the War Effort". The

(*Continued on page* 156)

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When the Scene Shifts . . .

No job of industry is so important as building sufficient weapons to win the War. That comes first. But when the scene shifts . . . when men at the front think of peacetime pursuits again . . . they have the right to expect that jobs—*good* jobs—are awaiting their return. The planning for these jobs must be done before the War ends. Here, at Guardian, while every production hour is devoted to War, we are also planning for Peace. If your post-war products include the use of relays we shall be glad to discuss plans with you so that your boys—and our boys—who are now in service, may quickly resume their peacetime pursuits.

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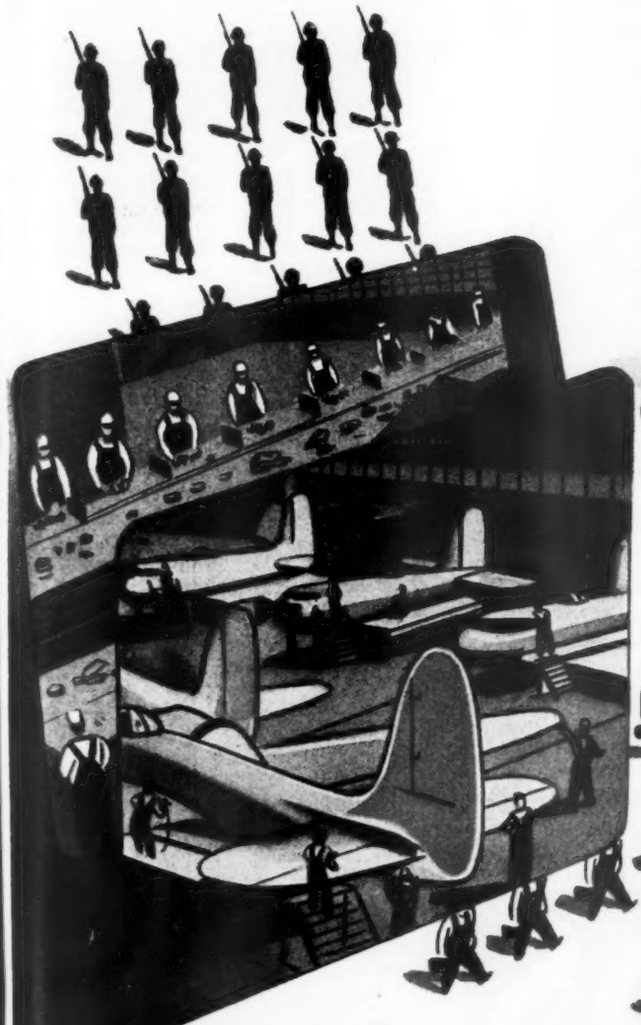

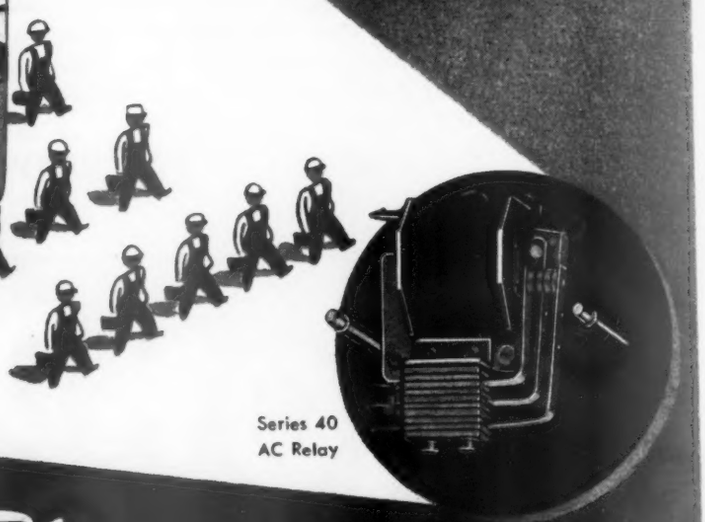

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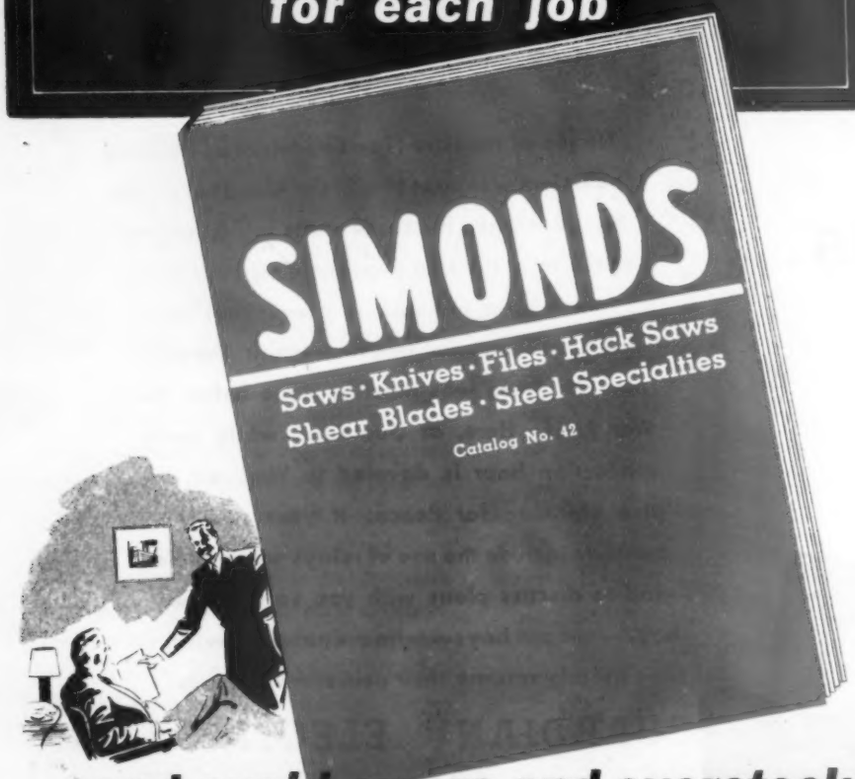

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Famous Family of
Quality Cutting Tools
BOUGHT YOUR BONDS THIS WEEK?

(*Continued from page* 154)

evening's program was preceded by a "Priorities Brought Up to Date" forum, with Carl Nissler, WPB analyst, as leader. The forum was sponsored by the association's Educational committee of which John S. Robinson is Chairman.

FIVE-MINUTE TALKS ON MRO AT BIRMINGHAM

A refresher course in the form of five minute talks on M.R.O. orders featured the September 16 meeting of the Purchasing Agents Association of Birmingham, the speakers and subjects being: L. C. Teague, Iron and Steel P-68; Henry Gray, Mines and Smelters P-56; and E. H. Wingate, Jr., Utilities U-1. Their talks were followed by a general discussion.

Speaker at the association's September 9 meeting was Don D. Campbell, sales manager of radio station W.B.R.C., whose subject was "Radio in the War". At a previous meeting the subject "Let the Sellers Beware" was presented by John Temple Graves.

Committees for 1943-44 are as follows: Entertainment, L. A. Brooks, chairman; Membership, M. N. Hoke, chairman; Publicity, George Cole, chairman; Attendance, Barnie B. Jones, chairman; Finance, T. H. Prater, chairman; Coal Reports, L. M. Quick, chairman.

L. M. Quick, purchasing agent, Alabama Power Co., Birmingham, is secretary of the association.

OPERATION UNDER CMP AT MILWAUKEE

Operation and Procedure under CMP in a questions and answers session led by G. L. Hartman of the Oilgear Company of Milwaukee, featured the September 14 meeting of the Milwaukee Association of Purchasing Agents, following a discussion of commodities. Mr. Hartman in presenting CMP procedure had the help of a panel of assistants consisting of Howell Pritchard, Charles E. Nelson, Jr., Clifford Dawley and Howard St. George. Six applications for membership were presented at the meeting.

That the Milwaukee Association will have a diversified active year is demonstrated by the large number of practical committees backing up the executive officers. There are 27 of these committees, as follows:

Educational, J. W. Nicholson, City of Milwaukee.

Entertainment, E. R. Wustrack, Kieckhefer Elevator Co.

Subjects, James M. Hamilton, Dumore Co. This committee has 14 members.

Employment and Welfare, E. L. Janke, Jos. T. Ryerson & Sons.

Membership, Oscar M. Bonesho, Hummel & Downing Co.

Publicity, Walter E. Radke, A. Geo. Schulz Co.

Exchange Bureau, Lyall C. Stilp, Kimberly-Clark Corp.

Legislative, F. H. Gavigan, Harnischfeger Corp.

Problems and Special Equipment, C. E.

(*Continued on page* 158)

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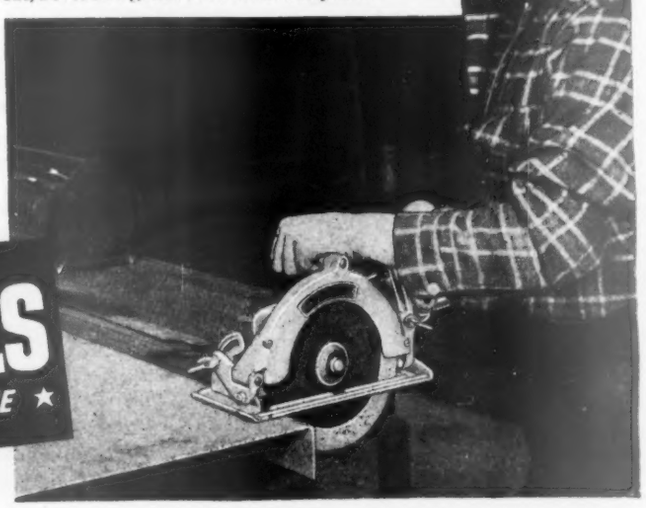

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American Swiss

SWISS PATTERN FILES

(*Continued from page* 156)

Wendelburg, The Louis Allis Co.

Constitution, W. H. Wenzel, Vilter Mfg. Co.

Attendance and Reception, Karl Kattner, The Oilgear Co.

Non-Ferrous Metals, C. E. Bradley, Loeffelbolz Co.

Chemicals and Paint Ingredients, E. A. Hentzen, Wisconsin Paint Mfg. Co.

Alloy Steel, C. C. Bremer, Interstate Drop Forge Co.

Bars, Bands and Structurals, A. R. Curtis, National Enameling & Stamping Co.

Coal, W. A. Gamble, Milwaukee-Western Fuel Co.

Office Supplies & Equipment, A. G. Buchholz, Chairman.

Petroleum Products, J. E. Barron, Pate Oil Co.

Lumber, W. H. Pritchard, Kearney & Trecker Corp.

Traffic, H. E. Moering, Evinrude Motors.

Paper, W. H. McCarty, Milprint, Inc.

Pig Iron, A. O. Hinz, General Malleable Corp.

Sheet Metal, H. A. Marvin, Milwaukee Stamping Co.

Pipes & Fittings, Charles J. Peterson, Rundle-Spence Mfg. Co.

Scrap, E. Schilz, Grede Foundries, Inc.

Plastic, C. F. Preston, Eclipse Molded Products Co.

Priority, Jos. F. Bode, Briggs & Stratton Corp.

PAST PRESIDENTS' NIGHT AT LOUISVILLE

September 21st was Past Presidents' Night for the Purchasing Agents Association of Louisville, and eleven of the past presidents were present. Of the 16 past presidents one is ill, three were out of town, and one is deceased. The meeting was addressed by Prof. Chas. W. Williams on "Have we Stopped Inflation". A special feature was a talk by Past President Claude Watkins on "Priorities Up-to-Date."

The following members of the Louisville Association are in Uncle Sam's service: A. B. Bush, Robt. E. Carroll, Dan Constant (honorable discharge), Chas. T. Hoertz, John A. Hottell, Geo. Robt. Parrott, Frank J. Uehlein, Claude Watkins (honorable discharge), and Herman Weist.

BALTIMORE ASSOCIATION PARTICIPATES IN THIRD WAR LOAN DRIVE

The Purchasing Agents Association of Baltimore is participating in the Third War Loan Drive, and members of the association have been requested to make their bond purchases through the association. At the regular monthly meeting of the association held in the Lord Baltimore Hotel, September 15th, Stewart Waring, District Price Executive of the Office of Price Administration was the principal speaker. The University of Baltimore is giving a course in "Wartime Purchasing and Stores Control", and one of the instructors is Lester H. Palmer, member of the Baltimore association.

PRESIDENT OSCAR GANO INSTALLED AT SPRINGFIELD, OHIO

At special installation services with Retiring President B. F. Downey in the chair, the following new officers took over at the September 8 meeting of the Purchasing Agents Association of Springfield, Ohio: President, Oscar Gano; Vice president, Don Applegate; Secretary, Ralph Weadon; and, Treasurer, W. R. Rush. These four with Eugene Saum, national director, H. C. Laybourne, local director, and W. A. Hammond, out-of-town director, make up the association's board of directors.

It was decided to continue to hold two meetings each month, as the bi-monthly meetings give the membership increased opportunity to discuss purchasing problems. National Director Saum gave an outline of the National viewpoint and encouraged the membership to become more familiar with the problems in their particular job. Three new memberships were approved, two of which were incident to changes in purchasing personnel.

EDITOR HEINRITZ OF PURCHASING ADDRESSES DALLAS ASSN.

Stuart F. Heinritz, editor of PURCHASING Magazine was guest speaker at the September 23rd meeting of the Purchasing Agents Association of Dallas (Tex.), which was held in the Adolphus Hotel in that city. His subject was "Red Tape Must Go By Request."

NATIONAL OFFICERS AT NEW ORLEANS

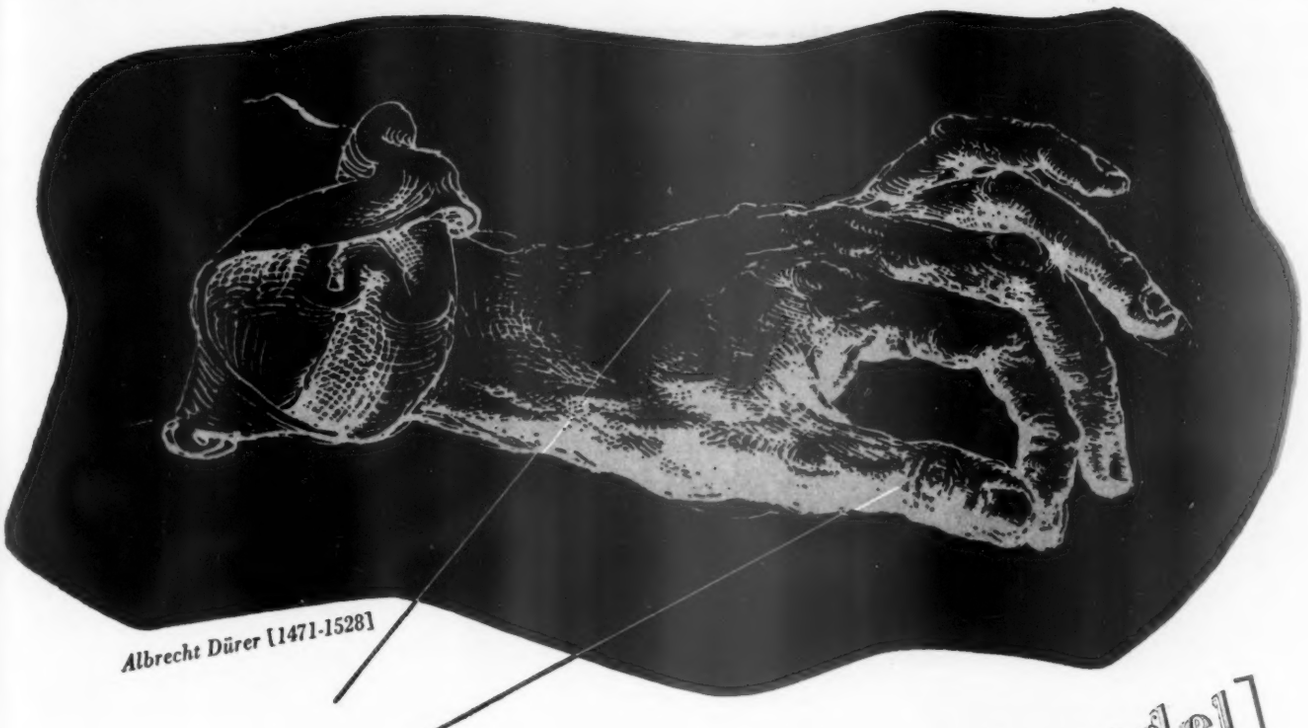
Ben R. Newberry, Director of Purchases for the Lone Star organization at Dallas, Tex., and president of the National Association of Purchasing Agents, and Vice President W. M. Kerrick, Purchasing Agent, the Mengel Co., Louisville, Ky., were guests of honor and principal speakers at the September 13 meeting of the Purchasing Agents Association of New Orleans, which was held on the Jung Hotel Roof. The national guests and members of the association had the pleasure of a trip throughout New Orleans harbor prior to the meeting.

MILWAUKEE SPONSORS CLASS IN PURCHASING

The Milwaukee Association of Purchasing Agents in collaboration with the College of Business Administration, Marquette University, is again sponsoring a two-semester evening course in Industrial Purchasing. As in the past, the course will be under the supervision of Professor George Knick, and conducted by Mr. Joseph Nicholson, Purchasing Agent of the City of Milwaukee. Various members of the Association, men with wide backgrounds in purchasing problems will assist in the lectures and bring the benefit of their varied experiences to the class.

The class, the fee for which is $10.00 per semester, is open to all in purchasing work as well as to allied workers such as

(*Continued on page* 160)



Albrecht Dürer [1471-1528]

Record Changer..[The original model]

THIS is the world's most efficient machine, the human hand, designed by the Master Craftsman. Its dexterity and versatility has never been matched mechanically. Yet modern science has found ways to add to the pleasure and comfort of humanity by relieving man's hands of many tedious tasks.

The modern Phonograph Record Changer is an example.

G. I. prewar record changers were conspicuously successful—notable especially for their long, service-free life, the permanence of their factory adjustment and ease of installation.

Our "E" for excellence in war production has accelerated the development of many new methods—new skills—new materials—new skills in the use of these materials. Obviously, you will find such advances in our Post-War record changers.

We believe that effective planning is essential if we are to accomplish a smooth reconversion. We have many plans—some definite—others, embryonic. Would you like to share in our plans? We will be glad to call on you to discuss our future and yours.

ARMY E NAVY

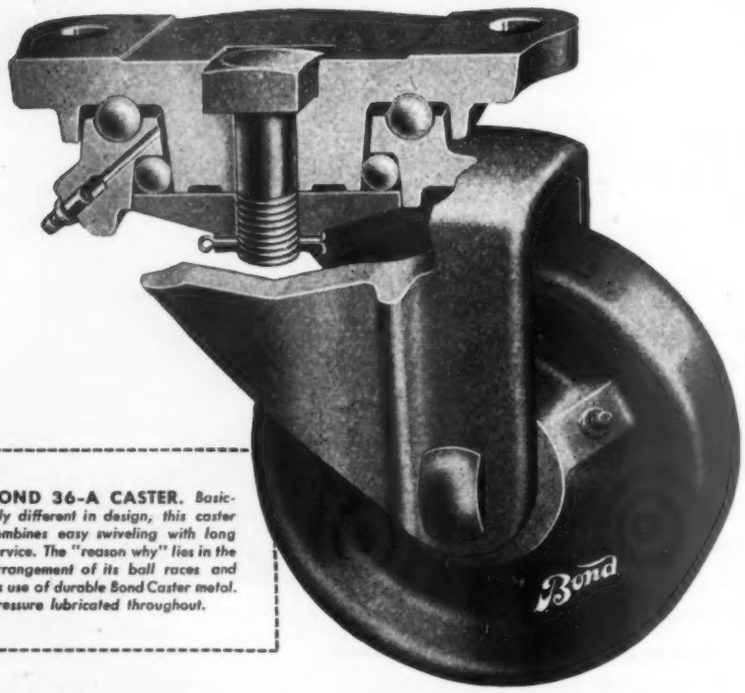
GENERAL INSTRUMENT CORPORATION

829 NEWARK AVENUE, ELIZABETH, N.J.

Tell It to the Engineers!

When the Army faces mechanical problems, it tells them to the engineers. Tell Bond engineers your truck caster problems . . . these experts have designed a caster to meet every industrial truck caster need.

Bond Engineers Design for the Job



BOND 36-A CASTER. *Basically different in design, this caster combines easy swiveling with long service. The "reason why" lies in the arrangement of its ball races and its use of durable Bond Caster metal. Pressure lubricated throughout.*

BOND engineering has a solid foundation of long and practical experience. Bond Truck Casters were the first to be designed for conditions met in actual operation. That's why they can be relied upon to measure up to the pace of war production . . . to speed your materials handling. Write for Bond catalog K-34.

BOND FOUNDRY & MACHINE COMPANY, MANHEIM, PA.

Bond * TRUCK CASTERS

* Reg. U. S. Pat. Off.

(*Continued from page* 158)

storekeepers, inspectors and production workers. The first semester covers fundamentals. It commences November 4 and continues to February 24, 1944, and its purpose is to supply a good working knowledge of purchasing principles, methods and procedure. The second semester is open to those who complete the first semester's work or who are Purchasing Agents or Assistants. It covers the period March 2 to June 29, 1944 and covers advanced problems and practices, the lectures being augmented by industrial sound movies. Graduates are given a 2½ hour University Credit.

CONTROLLED MATERIALS PLAN AT CINCINNATI

Under the direction of E. H. Cordes, chairman of the Educational Committee of the Cincinnati Association of Purchasing Agents, the September 14 meeting of the association was devoted to a discussion of CMP regulations led by Howard Barber and Henry Ritter, members of the local WPB organization.

OREGON PURCHASING AGENTS SEE ELECTRONICS FILM

A film entitled "The ABC of Electronics", released by the Westinghouse Electric & Manufacturing Co., was presented at the September 3 luncheon meeting of the Purchasing Agents Association of Oregon. Previous meetings were devoted to discussions of releases from the National Association.

The September 10 meeting was an "Income Tax" meeting, at which Albert King, chief auditor of the Internal Revenue Department spoke on "Pay As You Go", and answered questions from the floor.

QUALITY CONTROL BY STATISTICAL METHODS

Dr. Martin A. Brumbaugh, professor of economics at the University of Buffalo, was the principal speaker at the first fall meeting of the Purchasing Agents Association of Buffalo held in the Hotel Lafayette September 8. His subject was "Quality Control by Statistical Methods."

DICUSS CONTRACT CANCELLATIONS AT ST. LOUIS

"Contract Cancellations—a Vital Problem for Sales and Purchasing Agents" was the subject of a discussion by Stuart F. Heinritz, editor of *Purchasing* Magazine, at the September 21st meeting of the Purchasing Agents Association of St. Louis which was held in the Statler Hotel. Members of the St. Louis Sales Managers Bureau attended the meeting.

TWIN CITY P. A. S. GET INTO HUDDLE PRIOR TO MEETING

With the opening of the fall season, members of the Twin City Association of Purchasing Agents opened their Septem-

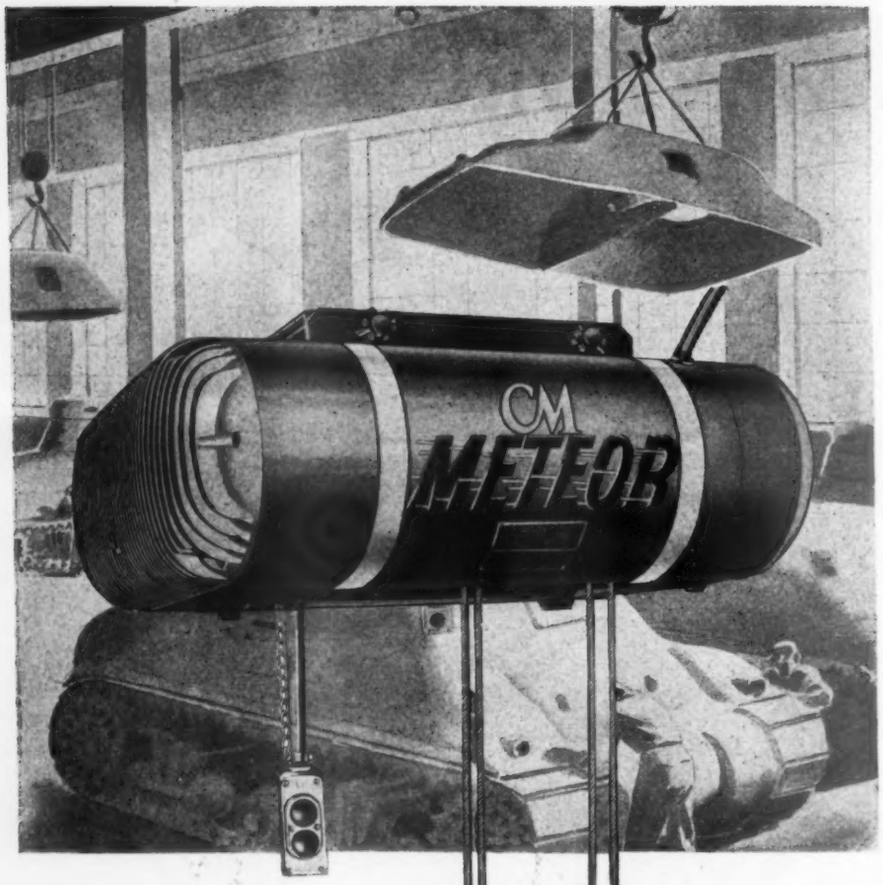
(*Continued on page* 162)

BILLINGS WRENCHES

The war is not yet won. Much remains to be done. Making Billings Wrenches is going on at top speed . . . "Men of Billings," with plenty of "know how," are shouldering the responsibility of finishing the job they started — to produce more and more Billings Wrenches.

"BILLINGS ALWAYS WILL BE GOOD"

THE BILLINGS & SPENCER CO., *Billings* FORGED TOOLS HARTFORD, CONN., U. S. A.



OVERHEAD HIGHWAYS
that speed War production

CM Throughout the nation CM Meteor heavy duty electric hoists ride the over head highways... speed War production in the lifting and transporting of materials and assemblies. CM Meteors lessen worker fatigue and reduce time-wasting interruptions. One hand push button control provides accurate spotting and leaves the other hand free for guiding the load. The CM Meteor is readily adaptable to present overhead monorail systems and cranes. Fully illustrated engineering catalog No. 142 explains why the CM Meteor will help you speed production.

CM METEOR

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INVEST REGULARLY IN VICTORY—BUY WAR BONDS AND STAMPS

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(*Continued from page* 160)

ber 8th meeting with a "P. A. Huddle" prior to the regular meeting. These pre-meetings are an informal get-together where the members bring to the fore any subjects they may want to lay open to discussion. At the regular meeting, H. H. Humphrey, a member of the faculty of Macalaster College, talked on "Total War and its Challenge to America."

★ ★ ★

NEW YORK ASSISTANTS' CLUB STARTS FORUM MEETINGS

The first of the fall meetings of the Metropolitan Purchasers' Assistants Club, New York, Clarence H. Berry, Prudential Insurance Co., president, held in Midston House September 14, commenced with a forum on "Your Desk System" led by Andrew Gunther, General Printing Ink Corporation. Commencing in October these forum sessions will be devoted to discussions on purchasing procedure for which the group will use as text material the "Basic Principles of Purchasing" now appearing in PURCHASING Magazine. After dinner, the meeting was resumed with the introduction of President Norman O. Aeby of the Purchasing Agents Association of New York. The principal speaker of the evening was W. E. Arnstein, well known Regional CMP Specialist.

President Norman O. Aeby of P. A. A. of N. Y. Opens Fall Season for Metropolitan Purchasers' Assistants Club

During the forum discussion Mr. Gunther emphasized the need for a well organized desk system in getting things done when they should be done, and as a means for avoiding lost motion as well as lost papers. He said that "first things must be handled first", and that "hard jobs should not be put aside" but should be cleared up in order of their importance. He said that he uses a "desk organizer", which enables him to keep all papers except the file he may be working on, under cover, which makes it possible for him to concentrate 100% on the job immediately before him. Other speakers said that they handled the rush matters first, and left the "hard" jobs for afternoon consideration when there usually was more time.

President Aeby of the New York Association briefly glossed over the changes that have taken place in Purchasing since the National Association was organized 28 years ago. He stated that Purchasing

(*Continued on page* 164)

BELTING AND HOSE WITH THE THUMB

Over 2000 years ago Aristotle established the thumb as a symbol of superiority with his statement, "the superiority of man over animals lies in the hand, the superiority over men in the thumb." The thumb is the symbol of fullest capability and strength. So, in Britain's darkest days, "Thumbs Up" was the sign of confidence. It told the invader, "we have the capability, strength, and that extra something that will win for us."

Each Thermoid industrial product gives that extra performance symbolized by the thumb. That is why we say, "belting and hose with the thumb."

Extensive research of your problems gives our engineers the "know-how" to build extra performance into Thermoid belting, hose and brake lining to fit your job. Our engineers and production specialists think first of your use, for outstanding performance must combine the right product with its correct job.

This policy of product-for-use is making outstanding performance records the standard. It results in that extra serviceability in all Thermoid products which is symbolized by the thumb.

So, when you specify "Thermoid," everyone from the president to the stock boy knows you are buying the best.

THE THERMOID LINE INCLUDES: Transmission Belting • F.H.P. and Multiple V-Belts and Drives • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Sheet Packings • Industrial Brake Linings and Friction Products.

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IT'S GOOD BUSINESS TO DO BUSINESS WITH THERMOID

PRECISION MADE
TO EXACTING STANDARDS

Every Holo-Krome Socket Screw Product must meet a definite standard of precision to qualify as a "Holo-Krome Quality" Product . . . The Holo-Krome standards are severe, precise and rigidly adhered to by the entire Holo-Krome organization.

The advantages of Holo-Krome precision are outstanding. Users settle their fastening problems by the use of this better fastening method . . . Specify "Holo-Krome".

GUARANTEED Unfailing PERFORMANCE

HOLO-KROME
fibro forged
SOCKET SCREWS

THE HOLO-KROME SCREW CORP., HARTFORD 10, CONN., U. S. A.

(*Continued from page* 162)

is now recognized as a skilled profession, and today is featured by full cooperation between buyers and salesmen. "Today we cooperate with salesmen and our suppliers and their engineers and technical men with a view to devising ways to cut costs and still permit them to make a fair profit. There is no question but what the purchasing profession has come into its own. I can give you no better proof of

President C. H. Berry, Metropolitan Purchasers' Assistants Club

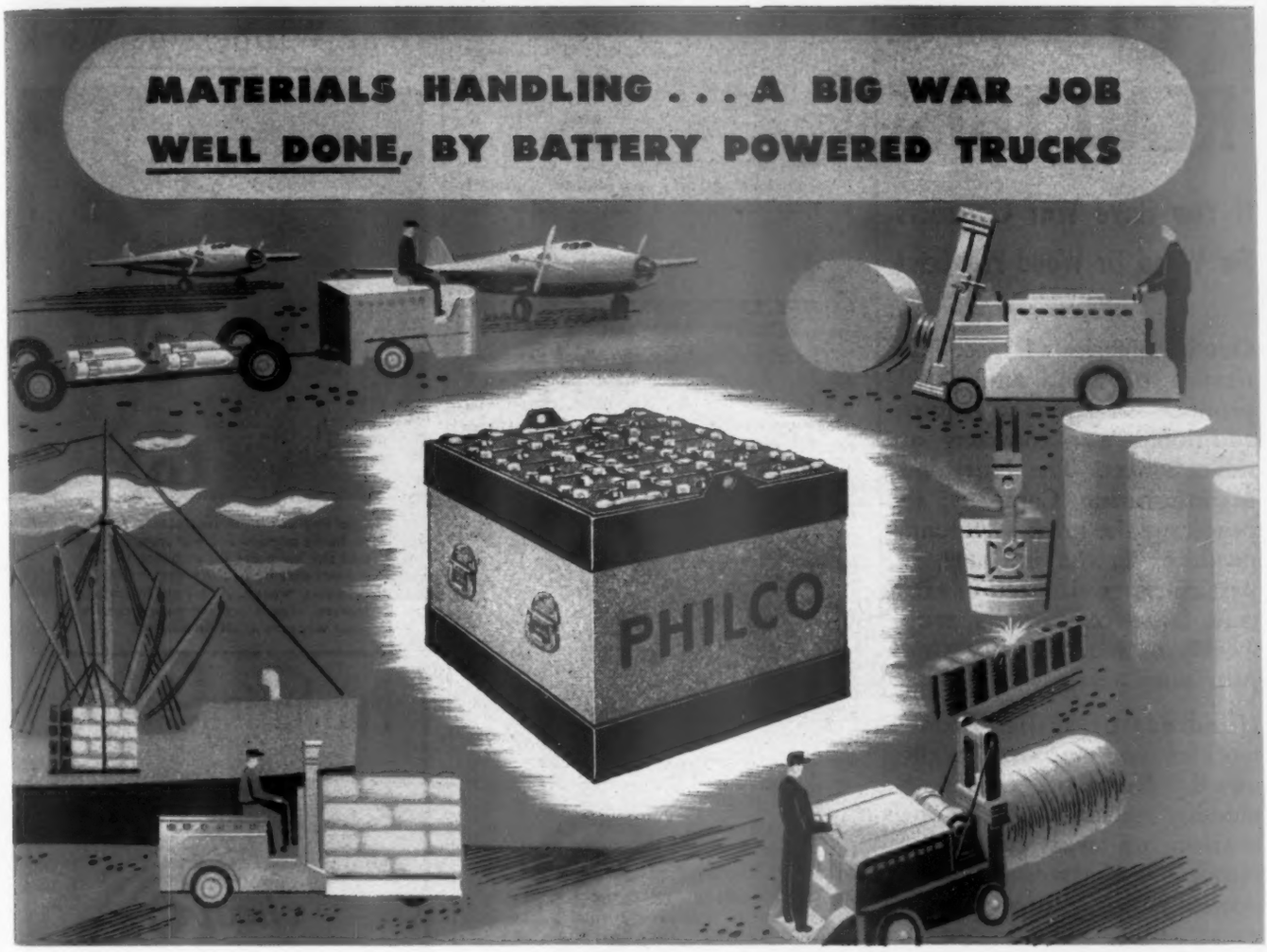
this than the fact that Donald Nelson, Chairman of the War Production Board, at our last national convention and previously commended the purchasing profession for the fine job it has been doing." Mr. Aeby complimented the assistants for their group activities, and stated that "The days to come will be crucial, and we will need all the help we can give to each other through the exchange of experiences and ideas. I know that I have saved a lot of time while investigating some particular problem by getting in touch with some of my fellow Purchasing Agents."

Mr. Arnstein declared that CMP is working and "working well", that the people who put in their applications are getting their material better than before, and it is felt that it is as good a way to handle the situation as there is. He warned that CMP should not be taken too lightly, for even though Italy has surrendered, that does not mean that the war is over, and anyone who figures on letting these details slide on the ground that "it will be all over pretty soon" is making a big mistake. Mr. Arnstein urged that persons operating under CMP regulations take time off to give thorough study to them to assure that they are conversant with the requirements and to determine whether the regulations "say what we think they say."

NEW ENGLAND ASSOCIATION COMMITTEES APPOINTED

President Henry G. Saumsiegle of the New England Purchasing Agents Association, (Purchasing Agent, City of Waltham), has made the following committee appointments: Program, Ralph D. Berry, Davol Rubber Co.; Commodities, Kendrick Burns, S. D. Warren Co.; Acquaintance, Leo Cotton, Ben Burk Inc.;

(*Continued on page* 166)



POWERED BY PHILCO "XL" BATTERIES, TRUCKS HAUL 10% MORE MATERIALS

IN war plants everywhere, electric industrial trucks are assigned the tremendous job of moving materials *where* they're wanted, *when* they're wanted! And everywhere, too, these trucks are powered with Philco "XL" Batteries because with a Philco in the battery box, trucks do 10% more work! Philco "XL" Batteries are engineered to give you 10% extra capacity with extra wallop... longer life... better performance, too. For complete details, write for latest Philco Industrial Truck Battery Catalog.

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STORAGE BATTERY DIVISION,
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Sales Agents in all Industrial Centers

Replace with **PHILCO** *Industrial Batteries*

READ THIS

If You Have War Contracts For Wood Or Wood Products!

One of America's largest fabricators of wood and wood products is anxious to acquire additional war contracts or sub-contracts. The Norwood Manufacturing Company, in peacetime the greatest volume producer in the industry, is particularly well fitted to execute large-scale orders with weekly or monthly repeating provisions.

Hundreds of skilled wood workers are employed right now by Norwood. Scores of modern machines are in operation on war contracts. However, Norwood's manpower and facilities are so great that a substantial amount of additional business can be handled promptly, efficiently and at low cost. Ample facilities for drying, machining, boring, assembling and finishing articles of wood or wood products.

Write, wire or 'phone Norwood today. If you care to send blue prints or samples of your products, Norwood will be pleased to quote you surprisingly low prices. Only bonafide war work, please, and only large-volume orders.

NORWOOD
Manufacturing
COMPANY

Fabricators of Wood Products

NORWOOD
Cincinnati (12) Ohio

(*Continued from page* 164)

Publicity, Paul T. Haskell, Jr., Parker Brothers, Inc.; Service Men, James L. Kelty, General Seafoods Corp.; Budget, Frank G. Kennedy, Simplex Wire & Cable Co.; Afternoon Conference, Frank J. Shea, Boston Gear Works, Inc.; Membership, Leland D. Wooding, United Farmers' Cooperative Creamery Association.

* * *

LAUNCH EDUCATIONAL MEETINGS FOR MEMBERS AND ASSISTANTS

The educational Committee of the Purchasing Agents Association of Washington (state), John S. Robinson, chairman, has launched a series of double-feature educational meetings for the benefit of members and their assistants. There are two series of meetings, one under the title "Priorities Up-to-date", which commenced September 9th, being held the second Thursday of each month prior to the regular meeting of the State Association, from 4:30 to 6:00 PM at the Washington Athletic Club.

The second feature is a series of commodity forum group discussions, embracing six subjects. These meetings are scheduled from 5:30 to 7:00 PM on alternate Tuesdays. The September 14 meeting was on "Glass and Plastics", the speaker being R. J. Whittemore, technical engineer, Pittsburgh Plate Glass Company. Meeting chairman, W. D. Anderson, purchasing agent, W. P. Fuller & Company. The September 28 meeting was on "Steel", and included the showing of a 45-minute picture on the making, shaping and treating of steel. The speaker for this meeting was Harold E. Gray, district sales manager Bethlehem Steel Company. Meeting chairman, N. D. Tichenor, Purchasing Agent Standard Oil Co. of California.

October 12, subject "Lumber"; speaker, Herbert F. Jefferson, supervising engineer, Nettleton Timber Co. Chairman, J. H. Holmes, Purchasing Agent, U. S. engineers.

The October 26 meeting will be on "Practical Psychology", the speaker being Hugh Bell, district manager, Equitable Life Insurance Co. of Iowa. Earl C. White, editor, *Washington Purchasing Agent and Manufacturer,* chairman.

November 9. The scheduled subject is "Paints", with A. H. Bowen, chief chemist, Paint Research Laboratory, I. F. Laucks, Inc., synthetic resins, emulsions, and casein paints; and Herbert E. Gross, superintendent Schorn Paint Manufacturing Co., oil paints. Meeting chairman, R. Guy Fredericks, Purchasing Agent, I. F. Laucks, Inc.

November 23 (tentative), "Chemicals". Speaker Fred Shanaman, Pennsylvania Salt Mfg. Co. of Washington. Meeting chairman, John S. Robinson, purchasing agent, Todd Seattle Dry Docks, Inc.

DISCUSS POST-WAR CHANGES AT CANTON

D. L. Glass of The Hoover Company was the principal speaker at the September 15 meeting of the Canton &

(*Continued on page* 168)

War Winners at Work

Can she continue inspecting sutures so badly needed for war hospitals, or will she have the flu tomorrow? The answer may be in the way she gets her drinking water. Are you furnishing sanitary single-service paper cups to your workers at all fountains?

Purchasing Agents

You can buy cheaper cups

but you can't get better value at any price!

AJAX AND AERO

Sanitary Paper Drinking Cups

LOGAN DRINKING CUP CO.
68 Prescott Street, Worcester, Mass.
PACIFIC COAST ENVELOPE CO.
416 Second Street, San Francisco

Divisions of United States Envelope Co.

Envelopes . Transparent Containers . Paper Cups . Writing Paper . Note Books . Toilet Tissue . Paper Towels

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ELECTRIC WELDED STEEL TUBING

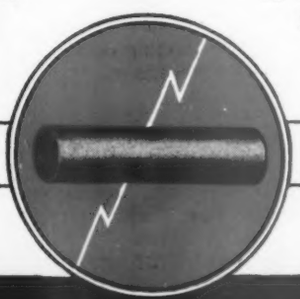
MEETS THESE SPECIFICATIONS

SIZES FROM 5/8" O. D. TO 4" O. D.
UP TO 40' IN LENGTH . . . . . .

To meet the needs of industry for minimum weight and maximum strength, Talon's Electric Welded Steel Tubing is manufactured from flat-rolled strip steel and tested beyond the required limits of standard specifications. Each coil of strip must meet Talon's rigid requirements for accuracy to chemical and physical properties, gauge, width and finish. Safety, ease of fabrication, light weight, uniform wall thickness and diameter, and concentricity are thereby assured.

During and after the cold-forming operation, each length is subjected to critical inspection, and every foot of pressure tubing is hydrostatically tested. Grain structure of wall and weld is homogeneous—no extra metal is added in welding. Controlled atmospheric annealing improves physical properties and produces a scale-free finish. Talon's Electric Welded Steel Tubing in sizes from 5/8" to 4" O. D. is available for prompt delivery in lengths up to 40 feet.

PRESSURE



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WHICH WAY ARE YOU TREATING YOUR PORTABLE CABLES?

BAD! Allow cables to lie in busy thoroughfare where every heavy truck or piece of equipment that comes along smashes away precious years of cable life.

GOOD! Protect cables with a portable cross-over guard—planks or steel sheets with wedge-shaped supports. Wide enough slots to permit cables to pass freely into space below.

OTHER DO'S AND DON'TS FOR LONGER CABLE LIFE:

ROEWELD TRAILING CABLE

ROECLAD POWER CABLE

ROEBLING FLEXIBLE CORDS

AVOID GREASE—To make cables slide through conduit easily—use talc or soapstone—never grease except for lead sheathed cables.

CUTS—Inspect for cuts frequently, and repair promptly.

KINKS—Remove kinks carefully as soon as you see them . . . Back them out—don't try to yank them out.

SPLICING—Splice short lengths of cable. Put them to use, don't scrap them.

AVOID HEAT—Avoidance of exposure to sun's rays—and other excessive heat extends useful life.

ROEBLING ELECTRIC CABLES and wires are built to give long service. If you help them by providing proper care, they'll pay dividends in even longer operating life. Aid your workmen by posting the Do's and Don'ts of cable care where they can see them every day. Increase the value of your investment in portable cables by promoting the observance of a few simple maintenance rules.

JOHN A. ROEBLING'S SONS COMPANY

TRENTON 2, NEW JERSEY • *Branches and Warehouses in Principal Cities*

ROEBLING

ELECTRICAL WIRES AND CABLES

(*Continued from page* 166)

Eastern Ohio Association of Purchasing Agents, which was held in the Elks Club, Canton. He spoke on Post-War Change-Over and New Developments in Industry.

WPB ANALYST SPEAKS AT DAYTON MEETING

The first meeting for the 1943-1944 season of the Purchasing Agents Association of Dayton (Ohio) was held September 9 at the Engineers Club, the speakers being C. Sidney Johnston, Jr., CMP chief analyst of the priorities division, local WPB, whose subject was "CMP Procedures and Regulations", and H. B. Doty, district manager of WPB.

INDUSTRIAL PURCHASING COURSE IN WAR TRAINING SERIES

A Course in Industrial Purchasing is included in a series of tuition-free war-training courses in the fields of engineering, science and management sponsored by the U. S. Department of Education, available to men and women at Hunter College of the City of New York. Content and purpose of the course is to provide specialized training in the purchasing procedures involved in operating under war contracts and in a war economy. Actual forms and cases are used to illustrate the salient points. Prerequisites are high school diploma; employment in essential industry with duties related to purchasing and inventory control. The course is for a period of 13 weeks, on the basis of three hours one evening each week.

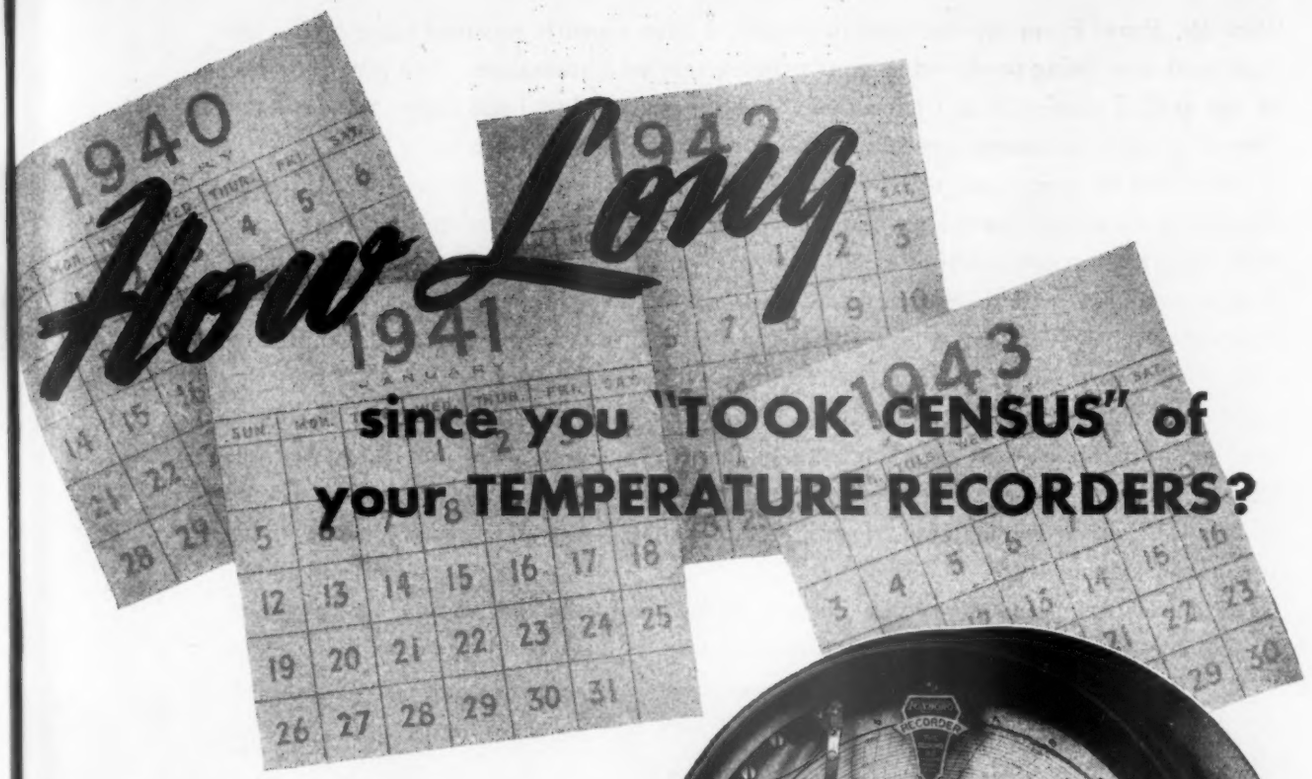
HENRY L. BRUEGGEMAN

Henry L. Brueggemann, Director of Purchases for Acme Steel Co., Chicago, died suddenly of a heart attack on September 15 at his home in Palos Park, Ill., September 16. He came to Acme Steel Co. as Purchasing Agent in Jan. 1934, a position he held until his appointment as Director a year ago.

Mr. Brueggemann, whose departmental organization and activities were described in the September issue of PURCHASING Magazine, was quite active in the affairs of the Purchasing Agents Association of Chicago, serving successive terms as member of the board of governors, second vice president, first vice president, and president. He also was a member of the board of directors of the National Association of Purchasing agents for the 1940-41 term, and in May of this year was reappointed to a vacancy on that board. He also was chairman of the Educational Committee of the P. A. Association of Chicago. In the latter capacity he co-operated with one of Chicago's leading colleges to develop educational courses in purchasing.

Born at East Cleveland, Ohio on April 7, 1897, Brueggeman lead an active life, having served under General Pershing in the Mexican Campaign. During World War I he enlisted in the U. S. Navy as a seaman where he rose to the rank of Boatswain's Mate.

Funeral services were held at Cleveland, Ohio. Mr. Brueggemann is survived by his wife, Eleanor F. Brueggeman.



How Long since you "TOOK CENSUS" of your TEMPERATURE RECORDERS?

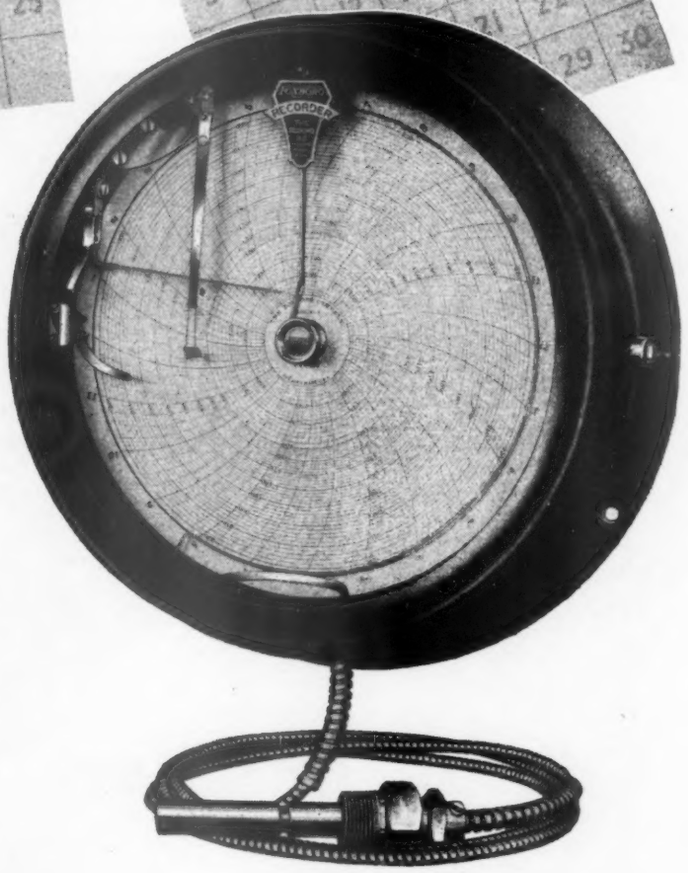
Now's the time to check up whether you've been overlooking important installations

Have you had a chance since pre-war days to survey your whole plant set-up with a view to getting *all the help you can* from Temperature Recorders? If not, you may be surprised to find how much your overall production can be improved by equipping a few neglected points with Foxboro Temperature Recorders.

These precision-engineered instruments give unerring guidance that eliminates any need for guesswork in controlling critical temperatures. Their ultra-sensitive thermal system reacts to slightest changes . . . their light, strong recording mechanism "writes it down," instantly and continuously, without loss of accuracy.

No matter what step in your operation demands uniform temperature, Foxboro Temperature Recorders will automatically give you the exact information to save quality-variations, spoilage, re-runs and lags in output.

Why not make a list *right now* of the trouble-spots that Foxboro Temperature Recorders might eliminate once and for all? Write for detailed Bulletin 198-2. The Foxboro Company, 178 Neponset Avenue, Foxboro, Massachusetts, U. S. A.



ARMY (E) NAVY

TEMPERATURE RECORDERS

by

FOXBORO

REG. U. S. PAT. OFF.

Dear Mr. Perry: From my stationer in Boston, I have recently received some of the new steel pens now being produced in your manufactory in Birmingham. As a long-time user of the quill, I confess that I tried them with misgivings, but I am happy to admit that they do produce a sharper result and, of course, are longer lasting.

There will be many who will hold fast to the quill, from habit or sentiment, just as the official decrees of some European governments continued to be engrossed on parchment long after paper made of rags had proved its equal worth. But I am not one to cling to custom, for its sake, save where quality is involved. In that I hold fast, for I am determined to produce only papers of enduring worth from materials of lasting character.

As to the method of production my mind is open and, like yourself, I am ready to adapt and adopt means that will increase volume without trespass on intrinsic merit. So it is that we have introduced some mechanical aids to supplement our hand processes and we shall continue to seek others that will make our papers available to more people for the transaction of business, the exchange of news and views, and for the wider diffusion of knowledge.

These are stirring and improving times in which you and I live and we are fortunate to be engaged in pursuits that contribute to the art of writing and enlarge the field of communication. By the more frequent and friendly use of the products of our manufacture, kindred spirits and common enterprises will be brought into closer union to their advantage and to the benefit of us all.

Truly yours,

ZENAS CRANE

Dalton, Massachusetts
4 October, 1824

Since the days of the quill pen, Crane has been making papers of cotton and linen fibres only, employing the accumulated skill and experience of five generations in the conversion of these enduring materials into distinctive papers for letters, documents of importance and record, tokens of value, and for many war-time needs and purposes, chief among them the War Bonds we buy that our arms may prevail and our freedoms be secured anew and for all time.

PRESERVING BUSINESS RECORDS

Digest of Study by The Business Historical Society, Inc. On the Why, What, How and When of Preservation.

IT is neither possible nor desirable to keep all business records indefinitely. A business concern has more important things to do and must avoid unnecessary expense. But selected material should be permanently preserved by individual firms because the historical information which it contains is of definite educational value (1) to the firms themselves, (2) to historians who are trying to study important aspects of human experience, and (3) to the general public which is served by business and which ultimately governs the conduct of business.

Nearly every business firm can profit from a better knowledge of its own history. It has been a distinct merit of private enterprise that it proceeds largely by trial and error, yet little progress is possible unless the mistakes, the successes and the relevant circumstances all become a fund of information which is readily available for future reference. In a small concern, the manager may keep such knowledge in his head and draw upon it as the need arises, but in a large corporation it is exceedingly difficult to grasp the entire current situation to say nothing of past events and trends.

The outbreak of war in 1939, for example, produced American business situations in which the experience of the period 1914-1918 would have been worth thousands of dollars. Hardly a firm could do more than search its executives' memories. The preservation of a few, well-selected records would have yielded definite, reliable facts.

The proper preservation of business records enables the management to obtain a useful perspective and to secure factual information which is of direct value in the conduct of business. These aids may make the difference between profit and loss, success or failure. Documents which are regarded as having slight value today may yet be of vital importance to the management ten or twenty years in the future.

Absolute permanence of records cannot be assured unless the paper used is made entirely of good quality cotton, linen, or hemp fibers. Vitally important records should be on 100 per cent rag paper of good quality.

A thin rag-content paper should be used for carbon copies for permanent record.

There are important legal advantages to be derived from the possession of old company records. Letters, memoranda, photographs, and old advertising copy frequently help in the settlement of legal disputes involving the infringement of patents and copyrights. They also aid in proving, defining, and dating firm practices and trade customs—often points of basic importance in legal suits. Nor should a firm overlook the importance of being able to produce papers in order to protect its interests in government investigations.

If properly handled, the regular retention of useful material, together with systematic destruction of the remaining records, will not increase office expense materially and in many cases will really save money, in addition to making the essential records more accessible for reference.

It is well to note that federal and state laws require the retention of certain records in various businesses for various periods of time. These legal requirements cannot be set forth in any brief, general statement. They overlap the historical needs, but they do not necessarily

(*Continued on page 172*)

RIBBONS for SERVICE

These service ribbons acknowledge outstanding performance by men in action. On the home front, too, outstanding performance is recognized.

In keeping a tremendous volume of correspondence and records abreast of roaring production lines, Pinnacle Ribbons and Carbons speed the flow of materials, save time and work. Because of their sharp legibility they assure clear originals and smudge-proof carbon copies. Their outstanding *quality* means longer wear, lower costs.

Thus when the "WELL DONE" commendation of a Navy Flag Officer to his command at the close of an action echoes down through industry, Pinnacle's part of the job is acknowledged by repeat orders in increasing volume. Pinnacle Ribbons and Carbons are made for *your* requirements. Ask your dealer — or the Columbia office nearest you.

COLUMBIA
RIBBON & CARBON MANUFACTURING CO., INC.
Main Office & Factory: Glen Cove, L. I., N. Y.
58-64 West 40th Street, New York City
204 Dwight Building, Kansas City, Mo.
227 South LaSalle Street, Chicago, Ill.
155 West Congress Street, Detroit, Mich.
227 East Michigan Street, Milwaukee, Wis.
200 Plymouth Building, Minneapolis, Minn.
107 Union Street, Nashville, Tenn.
1508 Fox Building, Philadelphia, Pa.
208 Standard Life Building, Pittsburgh, Pa.
205 East 6th Street, Cincinnati, Ohio
(Harris-Meers Company)
Also: London, England; Sidney, Australia

(*Continued from page* 171)

coincide in detail. In most firms the records kept for legal reasons *must* be supplemented by additional material if the needs of history are to be met.

ACCOUNTING RECORDS: In brief, enough accounting material should be kept to reveal in detail the revenues, expenses, and net financial results of the business and also the methods of accounting. Most businesses nowadays have periodic summary statements prepared which show the main operating facts in convenient form, but future researchers will probably desire information on points not now studied, and main original accounting records should therefore be preserved as sources for reference.

In addition, a sample of every accounting form used should be kept, bearing a brief notation of the date of its first use, the form or forms which it supplanted, and (if not obvious) the method of its use.

ACCOUNTING RECORDS Which Need Not Be Kept: Such records as sales checks, invoices, receipts, cancelled checks, time tickets, purchase orders, shipping notices, bills of lading, and the like are very bulky and of limited historical value. In most cases they may be safely destroyed as soon as they have ceased to be of current use. It would be generally useful, however, to preserve samples of such records.

PURCHASING: The chief points of interest in the Purchasing Department's records are (1) the methods and policies followed in making purchases of supplies, materials, and equipment, (2) the items and amounts bought and their source, and (3) the prices paid for them.

Ordinarily the first will be taken care of by the preservation of samples of all forms used, together with any important reports, letters, specifications, and memoranda which are issued by the purchasing department or addressed to it by the central management. The second and third points will usually be satisfied by the retention of materials ledgers and summary records showing the amounts bought by accounting periods, together with data on the highest, lowest, and average prices paid, with the respective dates and including information about discounts, allowances, and special concessions on goods purchased.

(EDITORS NOTE: Purchasing agents are specifically warned on the need for keeping permanent records of all wartime contracts and purchases, and all correspondence of an official nature with any and all government departments, bureaus and agencies. Careful record should be kept of all correspondence and records on contract negotiations and renegotiation activities, of whatsoever nature. Also, special care should be taken in the preservation of records in accordance with War Production Board or other government department instructions.)

PRODUCTION: On the side of manufacturing activities, sufficient material should be retained to indicate what the firm makes and how it is made. To this end it is desirable to preserve charts showing plant layout, the internal transportation system, the organization of the manufacturing staff, and the flow of materials and work in process; ****and a description of the system of planning, routing, scheduling, and despatching used, with notes explaining subsequent changes or modifications in procedure.

INVENTORY: Material should be kept showing the records and procedure used in maintaining and controlling inventories, both of raw materials and supplies of finished goods. Supervision of stores and inventories may lie with the purchasing, production, or accounting department, or may be separately organized, but the function in any case is one of considerable importance to the firm as well as to the historian.

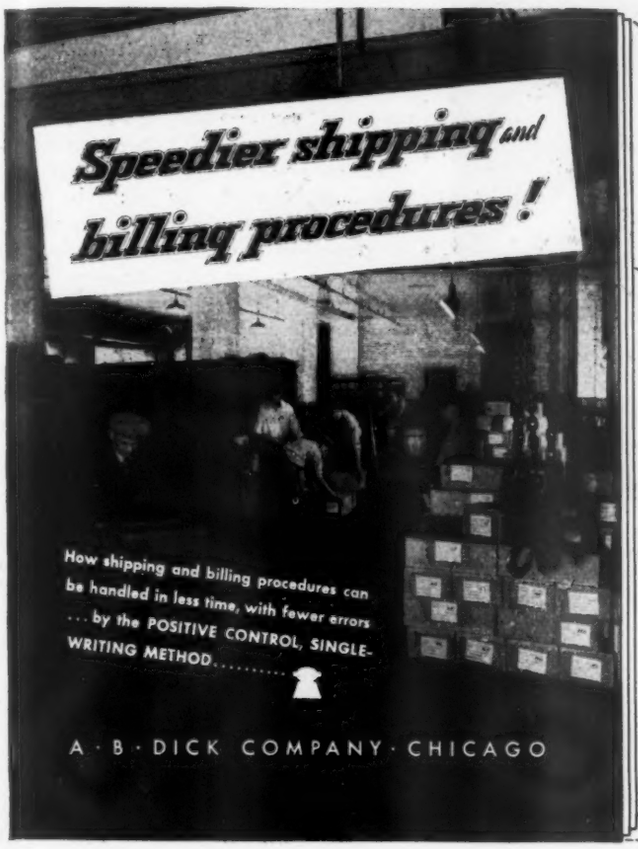
THE PROGRAM: (1) To save unnecessary expense, confusion, and storage space, any records which have no future value should be destroyed as soon as they have ceased to be of current use. (2) No record should be retained after its current use has ceased, regardless of its future value, if the information it contains is duplicated by other records which are scheduled for preservation. (Editor's note: Purchasing executives, in my opinion, should not destroy any records pertaining to wartime activities as previously mentioned). (3) It is almost useless to schedule any material for preservation unless such material is to be properly protected from destruction by the elements and unless it is systematically labeled and arranged so that wanted items can be found.

Determination should be made as to exactly the records which must be permanently preserved to satisfy

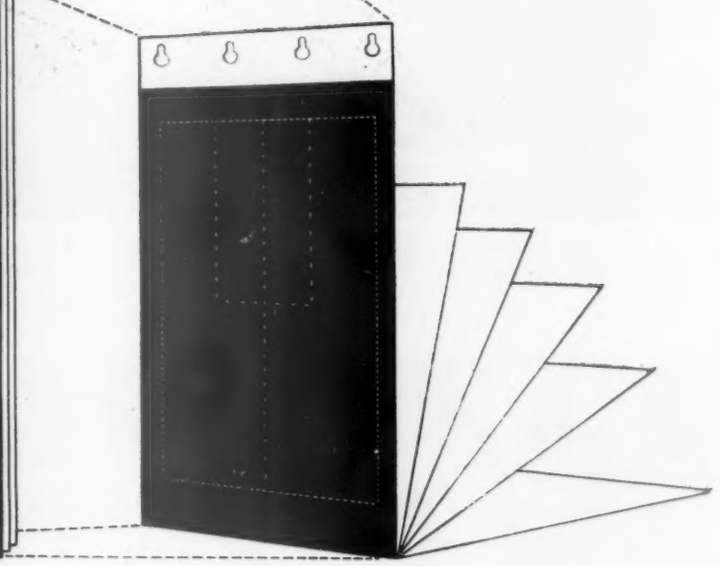
(*Continued on page* 174)

The new method of handling

Shipping and Billing Procedures


Speedier shipping and billing procedures!
How shipping and billing procedures can be handled in less time, with fewer errors ... by the POSITIVE CONTROL, SINGLE-WRITING METHOD.....
A · B · DICK COMPANY · CHICAGO

New folder shows how to produce sufficient copies of all requirements ... in permanently legible form ... from a single writing



War-swamped industry has welcomed the new method of handling shipping and billing paper work provided by Mimeograph duplication.

Invoices, shippers, packing lists, even receiving and accountability reports—all the paper work needed to ship and bill merchandise—can be produced from a single writing on a Mimeograph brand stencil sheet.

The necessary number of copies of each requirement is produced from the original writing. And each copy comes out clear, crisp, black-on-white and remains permanently legible, nonsmudging, in spite of greasy hands and the roughest kind of treatment.

In addition to these outstanding benefits, this single-writing method eliminates many possibilities of error, and helps assure shipment of correct merchandise in the right quantity.

Details of this advanced method of handling shipping and billing procedures are explained in the new folder, "Speedier Shipping and Billing Procedures." Send for your free copy and learn how this simplified operation can reduce paper work and help you speed production. Send coupon to A. B. DICK COMPANY, Chicago.

Mimeograph duplicator

MIMEOGRAPH is the trade-mark of A. B. Dick Company Chicago, registered in the U. S. Patent Office.

A. B. Dick Company, Dept. P-1043
720 West Jackson Boulevard, Chicago 6, Illinois

Send me a free copy of the folder, "Speedier Shipping and Billing Procedures."

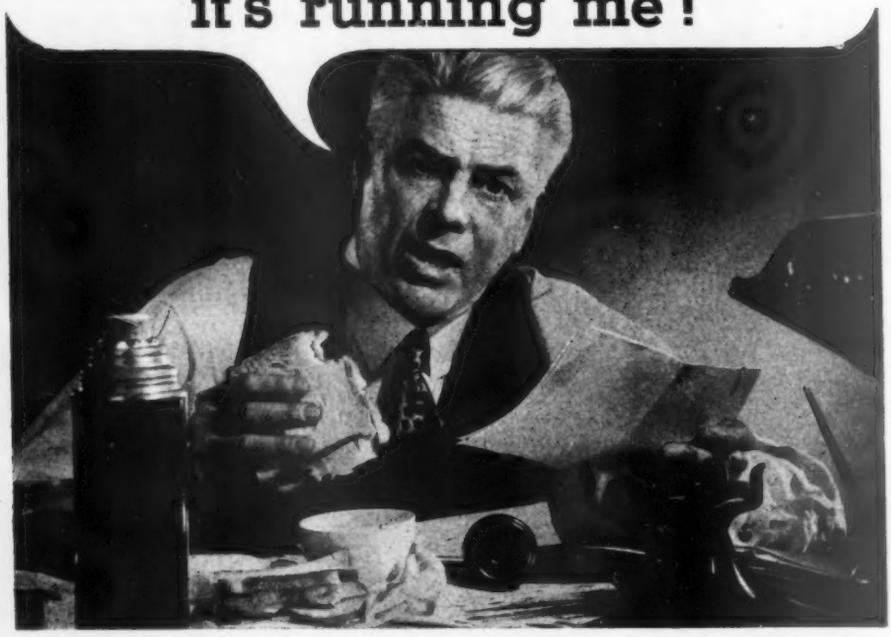
NAME.....

COMPANY.....

CITY..... STATE.....

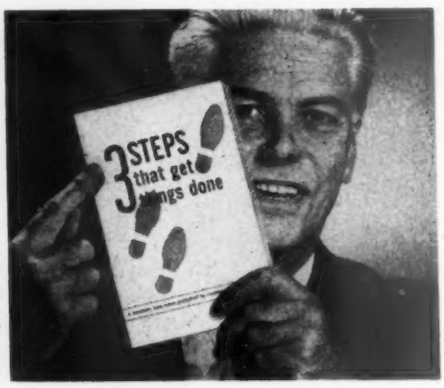
THE STANDARD OF SPEED AND LEGIBILITY IN THE ONE-WRITING SYSTEM

I'm not running this job . . . it's running me!



"I THOUGHT I WAS stepping up to an executive position, but look at me! Buried in red tape . . . desk like a junk heap. I spend half my day attending to petty details . . . then lie awake half the night worrying about jobs I don't have time to get at. It's getting me down—and it's hurting my work!"

"WHAT THIS? An ad about a chap in the same fix I'm in. He licked his problem with the aid of a Hammermill booklet that showed him how to pass along details and free his time for important work. Maybe it will help me.



"LUCKY FOR ME I sent for that new little book, '3 Steps that Get Things Done.' It showed me how to put things in writing. How to use paper to assign jobs, keep them moving and follow them up until they're done. Today I'm right on top of my job."

LOOK FOR THE WATERMARK — IT IS HAMMERMILL'S WORD OF HONOR TO THE PUBLIC

"KNOW HOW"

When you rely on paper, specify Hammermill Bond. Backed by 45 years' experience, Hammermill's papermakers have the "know how" to produce the kind of paper that meets the test of business use.

HAMMERMILL BOND

ARMY-(E)-NAVY

FOR VICTORY, BUY WAR BONDS

HAMMERMILL PAPER COMPANY, Erie, Pa.

Please send me, free, a copy of the little book, "3 Steps that Get Things Done."

Name_____ Position_____

(Please attach to, or write on, your *company* letterhead) PU-OC

(*Continued from page* 172)

the company's legal requirements. Once these are segregated, all attention should be focused upon the remainder, assigning each type of record to one of the following classifications:

(1) Records which, for operating or historical reasons, should be permanently preserved in their entirety.

(2) Records which, for legal or operating reasons should be kept for a certain period of years (usually three to seven): (a) those which may subsequently be entirely destroyed; (b) those from which a sampling or selection should be taken for permanent preservation before the destruction of the remainder.

(3) Records which may, from a legal or company standpoint, be destroyed as soon as their current usefulness has ceased but from which a sampling or selection should be taken for permanent preservation before the others are destroyed.

(4) Records which should be entirely destroyed as soon as they have ceased to be of current use.

PROPER MATERIALS FOR PERMANENCY: A program for the preservation of business records will fail completely if the paper used is likely to disintegrate or if the marks on the paper are likely to fade away, as a result of chemical action. According to the most reliable information now available, absolute permanence of records cannot be assured unless the paper used is made entirely of good-quality cotton, linen, or hemp fibers. High-grade paper made of purified wood pulp may be satisfactory but its permanence is not yet fully proved.

This means that minutes, ledgers, and other vitally important records should be on 100 per cent rag paper of good quality (high content of alpha cellulose, low copper number, and minimum amounts of rosin and acid). Such paper is inevitably more expensive than stock which contains any quantity of bleached chemical wood fibers (the so-called "sulphite" or "soda" pulp papers). It should be remembered, however, that by far the largest part of the cost of records is the clerical expense of making them. Efforts to save money by using inferior papers are, therefore, usually very short-sighted and uneconomical.

Where relative permanence is sufficient and price considerations are urgent, the paper stock may be of properly prepared all-chemical

(*Continued on page* 177)

NEW... TWO COLOR

Hectograph Reproduction

FOR USE ON ANY SPIRIT OR LIQUID DUPLICATOR

Two colors, vividly contrasting, make your forms or memoranda easy to read and understand—in a flash! This new feature is a real aid to efficiency!

By giving the employee a strong visual aid in picking out the variable notations on a form or requisition, you lessen his errors and speed his performance.

With Uni-Master you can put two colors on a blank sheet in a single hectograph run! No extra work, no extra attachments, no skilled labor required. The cost is small—the results are an eye-opener!

Send for V.... UNI-MASTER SAMPLES AND DETAILS OF THIS NEW PANAMA-BEAVER IDEA

MANIFOLD SUPPLIES COMPANY

(MAKERS OF PANAMA-BEAVER CARBON PAPERS AND INKED RIBBONS)

UNI-MASTER DIVISION

188 THIRD AVENUE • BROOKLYN 17, N.Y.

VICTORY BEGINS ON PAPER

The materiel of war, like the Declaration which first proclaimed us free, begins—simply and clearly—*on paper!* . . . Before a submachine gun can spray its death, it must first find life—*on paper!*

Hamilton Papers are, of course, at war...and the Hamilton mills at Miquon, near Philadelphia, are producing untiringly for our Army, Navy, Marine Corps, and Air Forces, for our Government and for our war industries. Nor are they neglecting the war-time needs of privat enterprise. To the fullest extent of our resource Hamilton Papers are being made for *you.*

Specify Hamilton Papers with every assuranc that Hamilton merchants the nation over wi do what they can to meet your needs for "goo papers for good business."

W. C. Hamilton & Sons, Miquon, Montgom ery County, Pennsylvania. . . . Offices in Chicag and New York.

HAMILTON PAPERS

GOOD PAPERS FOR GOOD BUSINESS

(*Continued from page* 174)

wood-pulp which is absolutely free from unbleached or ground wood fibers and bleaching residues.

Ink, too, must be considered. Most of the popular writing inks fade badly after a few years, and any records of importance which are to be kept by hand should be made with permanent black record ink conforming to government specifications. It should be noted that inks of the ferro-gallo-tannate types, which are excellent in resisting light, have a harmful effect upon record papers. Ink containing ammonium oxy-ferri-gallate is free from this defect and is therefore recommended. The great majority of modern business records are, of course, typed. This simplified the problem, for the typewriter drives carbon into the paper and makes a mark which will last as long as the paper itself.

Many companies have considered the question of paper quality for original records, but the tendency has been to give no thought to the quality of paper used for such items as copies of outgoing letters. Much of the cheap yellow paper which is currently used for carbon copies will distintegrate within a decade. For correspondence of a *pro-forma* character it is adequate, but for letters issued by senior executives it is clearly unsatisfactory because of its perishability. A thin rag-content paper can be obtained which is suitable for making carbon copies and also has the durability required for historical records. The only satisfactory alternative is to photograph all important items which are on perishable paper.

MICROFILM: Developments in photographic equipment provide an effective and economical means of duplicating records. As a result photography should be considered, (1) as affording an alternative to the preservation of bulky original records, and (2) as a means of obtaining accurate copies to provide additional protection against the loss of irreplaceable documents of vital importance. When microfilm is used, the saving of space alone is a factor which no firm can ignore. Records which are reproduced on 35 mm. roll film require only about two per cent of the storage space occupied by the originals.

STORING: The greatest menace to records (apart from wanton destruction) is fire. The records of recognized value are usually kept in fire-resisting vaults or containers. Dampness constitutes another danger to records. Storage quarters should be dry and reasonably safeguarded against flooding from sudden rains, clogged drains, or leaking water pipes. Records should be adequately protected against dust and dirt. In addition to being easier and more agreeable to handle, clean records last longer. Precautions should be taken to guard against insects and rodents. Ideal storage quarters do not permit any sunlight whatever to enter. Air conditioning provides chemically pure air which maintains the correct temperature and humidity. The storage temperature should not exceed 80 degrees Fahrenheit, and humidity should be kept between 35 and 55 per cent.

No record should ever be destroyed unless a form has been filled out and the disposition properly authorized by the executive in charge of the records. This form, which becomes a part of the permanent records, should show the nature of the records, the inclusive dates of each lot, the signature of the person authorizing disposal, and the signature of the person who was actually in charge of the disposal of the records.

Recommended Minimum Schedule

The following list contains the business records which constitute the bare minimum of material which a firm should keep. It is desirable to add other items to the schedule, but certainly nothing should be eliminated from it without serious loss.

ACCOUNTING RECORDS: All ledgers containing controlling accounts. All journals to the control ledgers. Balance sheets and operating statements. Auditors' reports. Tax returns. All reports and comparative statements containing the analysis of operating figures over any period longer than one year.

PURCHASING: Reports or memoranda summarizing specifications and sources of supply. Any written statements of purchasing policy. Summary statements of purchases. (Editor: All wartime records, war production purchase orders, contracts, specifications, contracts, and correspondence).

PRODUCTION: Charts of plant layout. Charts showing flow of work and materials. Any descriptions or summaries of planning and production. Comparative figures of production.

INVENTORY: Summary statements containing comparative figures. Editor—All wartime records).

YOU, TOO, WILL LIKE
ACE'S
NEW WARTIME
STAPLER

PRECISION BUILT BY SKILLED ENGINEERS

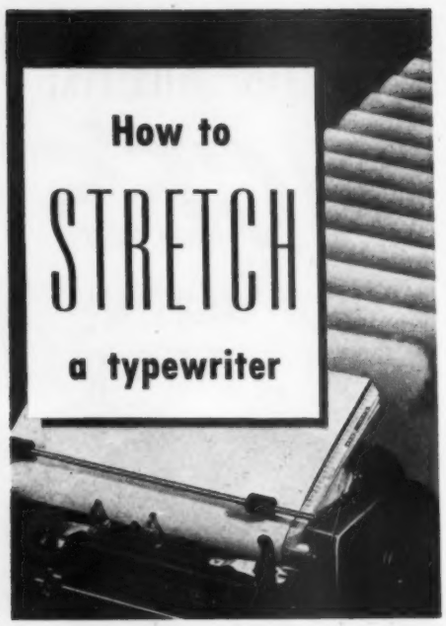
Today there are thousands of Ace's New Wartime Staplers doing a man's sized job in offices, factories and Government Departments. Those who have had an opportunity to test it find this new model gives highly satisfactory service . . that it lives up to the Ace tradition of building only the finest stapling equipment.

Model 402-V. has that same smooth, easy, efficient, dependable operation found in all Ace machines. Although lighter in weight, it's a sturdy, long-lived machine. Steel has been used wherever strength and precision are required. Model 402-V. loads a full strip of 210 No. 400 Pilot Standard staples. Try it! You'll appreciate its many superior qualities. Shipments will be allocated to those qualifying with priority ratings.

SOLD THROUGH DEALERS EXCLUSIVELY

ACE FASTENER CORPORATION
3415 North Ashland Ave., Chicago 13, Ill.

ACE The WORLD'S FINEST
Stapling Machines
FOR EVERY PURSE AND PURPOSE



New typewriters—and girls to operate them—are hard to find today, and your load of work may be increasing. Here's a sensible answer to that problem: get the highest results from your present staff and machines by giving them the fastest and most efficient typing aids.

Webster's Micrometric Carbon Paper (the famous paper with the white scale) saves seconds on every letter. Those seconds add up to precious hours. The white scale enables the secretary to space her letter properly at a glance, without time-consuming guesswork and fumbling. The carbon paper is pulled out instantly and cleanly. It makes sharp and permanent impressions.

Webster also makes the famed MultiKopy Carbon Paper and Star Brand Typewriter Ribbons and can supply you with carbon papers for gelatin hektograph and spirit process duplicating machines; carbon-paper ribbons for photo offset work; ribbons and carbons for all Elliott-Fisher, Addressing, Teletype, Adding, and International Business Machines.

Winning the War Requires Carbon Paper and Typewriter Ribbons

For Service and Samples Write:

WEBSTER'S

7 Amherst St., Cambridge 42, Mass.

CARBON PAPERS and TYPEWRITER RIBBONS

Factory branches in New York, Philadelphia, Chicago, Pittsburgh, and San Francisco

ORDER AFFECTS ALL USE OF PAPER

Manufacture of Number of Paper Articles Forbidden And Tonnage Restriction Put on Other Products

The manufacture of a number of paper articles was forbidden and restriction in the tonnage permitted for many other converted paper products were ordered by the War Production Board recently.

It is estimated by the WPB Pulp and Paper Division that amended Conservation Order M-241-a, which literally affects all use of paper and is far more inclusive in its scope than any other paper conversion order, will save between 250,000 and 300,000 tons of paper. The paper saved will be utilized to far better advantage in meeting the present exacting war requirements and certain civilian needs for paper and paper products.

Definitions spell out clearly that the order covers all processors or converters of paper regardless of their identity. For example, a converter is defined as any person who, regardless of the identity or nature of his business, manufactures or assembles any converted product from pulp, paper or paperboard. Strict inventory controls have also been added, limiting the amounts of paper or paperboard converters may carry in stock for the manufacture of converted products.

Although the general public may have to do with less fancy and decorative papers or articles made from paper, the real needs of the average citizen will not be seriously affected because plenty of utilitarian articles will still be available. A sharp curtailment of unessential products, however, was found necessary in view of the decreased production of pulpwood from which pulp and then paper is made.

Four lists forming a part of the order specifically name a great many paper products, which may be manufactured up to varied percentages of the 1942 rate of operation. These percentages range from a high of 110 percent to a low of 80 percent. However, there is also a list of products production of which is unlimited; those articles being ones which are either direct war products or highly essential to the civilian economy.

In addition to the restrictions on named products, the order also places a 30 percent production curtailment, effective October 1, 1943, on a vast number of other paper articles. Prior to that date, these articles are frozen at the rate of operation in effect during the first six months of 1943.

Among the unrestricted articles for military use which may be made of paper regardless of previous rates of production are the following: ration containers; balloons; bombs; camouflage paper; gas mask parts, gas protection capes and similar products; gun and rifle protective sleeves; helmets and accessories; hospital wadding and surgical bandages; parachutes; targets; and V-mail blanks for the Armed Services.

Civilian Products

Unrestricted civilian paper products include abrasive paper; adding and business machine rolls; binder twines; carbon paper; fuses, gears, valves and gaskets; gummed tape; blue print, photographic and tracing papers; paper-base plastics and printing plates; paper-base napkins; shoes and parts; tabulating cards, and commercial and industrial tags.

Products intended chiefly for civilian consumption and use, which now may be manufactured at a rate of 100 per cent of 1942 production include: artificial leather, buttons, envelopes, stationery, tablets, toilet tissue, sales tax tokens, shingles and waxed papers.

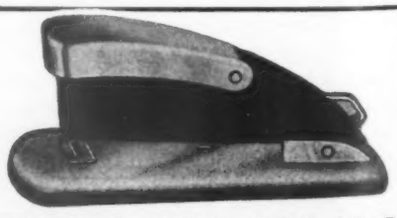
Other household and industrial products are set forth in a third list, and may be produced at a rate of 100 per cent of 1942 production. They include dental pinafores, dishes, plates, forks, spoons, napkins, towels, facial tissues, fruit wrappers, hat and cap visors; light shades and reflectors; lunch boxes, photo mailers and mounts; soda straws, and window shades.

Only 80 percent of the products in a fourth list may be made after August 1, 1943, in proportion to the quantity manufactured in 1942. These include carpets, chair seats and covers; fly paper; games and toys; music rolls; mailing tubes;

(*Continued on page* 180)

STAR STAPLERS

The best way to fasten papers. Needed on every desk. Use economical standard size staples. Built to last. Guaranteed against defects.



STAPLERS STILL AVAILABLE On Priority Orders.

Essential industries needing paper FASTENERS and TACKERS can still be supplied.
Model S 122A shown above lists for only $1.90.

Write for catalog

STAR PAPER FASTENER CO., NORWALK, CONN. Dept. P

An Ohio Bank reports:

"We find our pens last three to four times as long since we filled all ink wells with Parker Quink."

Paul G. Hawke, *Auditor*
The Harter Bank & Trust Co.
Canton, Ohio

Quink with solv-x

cleans pens as they write . . .

prevents corrosion . . . insures long life

SOLV-X *in every bottle of Quink . . . protects pens in 5 ways!*

1. Protects rubber . . . lengthens the life of sac or diaphragm.
2. Dissolves sediment and gum left by other inks. Cleans your pen as it writes.
3. Prevents clogging of feed.
4. Safeguards base metal parts . . . prevents corrosion.
5. Assures quick starting and even flow at all times.

Replacement of steel or fountain pens under present conditions is both costly and troublesome.

Shrewd purchasing directors have seen that most pen breakdowns are directly caused by the corrosive effects of high-acid inks. They have found the answer to prolonged pen life by switching to *Parker Quink* containing the exclusive pen-protecting ingredient—*solv-x*.

Solv-x stops destructive gumming and crusting . . . *cleans pens as they write.* It prevents the corrosion of metal and the deterioration of rubber.

And now, as one of 7 brilliant colors, Quink with *solv-x* offers a new, *all-purpose* writing fluid—"Micro-film Black" Quink. It writes black! It stays black—permanently! Unexcelled for photographic reproduction . . . *perfect for every writing use.*

Save pens and money with *Parker Quink.* Get Quink from your office supply dealer—or for more information, write The Parker Pen Company, Box P-10, Janesville, Wis., and Toronto, Canada.

Copr. 1943 by Parker Pen Company

FOR PHOTOGRAPHIC RECORDS . . . *"Micro-film Black" Quink insures perfect reproduction. Jet black—ideal for* all *writing. Quink comes in 7 permanent colors: Micro-film Black, Blue-Black, Royal Blue, Green, Violet, Brown, Red. 2 washable colors: Black, Blue. Family size, 25¢. Other sizes 15¢ and up.*

Get economical pints, quarts, gallons

PARKER Quink

THE ONLY INK CONTAINING PEN-PROTECTING SOLV-X

Wise personnel and office managers are looking into the "little things" that help keep workers on the job.
Old Dutch Line products—Typewriter Ribbons and Carbon Papers—offer top quality advantages appreciated by secretaries *AND* executives. Clean-sharp impressions, easy to handle, smudge-free, longer-lived ribbons and carbons . . . Qualities that have become second nature to us in more than 43 years of superior product development.

ASK THE *OLD DUTCH* SALESMAN!

WATERS & WATERS BRANCH
511 LOCUST ST., ST. LOUIS
Burlington, N. J. San Francisco, Calif.

INSIST ON
Parsons Paper
FOR YOUR
Forms
Records
Stationery
•
Superior Quality
MADE FROM COTTON FIBERS
•
Ask your Printer for Samples of these fine grade Papers
•
PARSONS PAPER CO.
HOLYOKE · MASSACHUSETTS

Inadequate indexing wastes time — clearly marked card files, books, work sheets, folders, portfolios can eliminate much of the "paperwork bottleneck". Check your indexing and tab every key reference with

GENUINE-ORIGINAL
MAK-UR-OWN
TRADE MARK REG. U. S. A.
CELLULOID
INDEX TABS

— turn instantly to needed data. Seven colors, three widths, for typed, written or printed captions.

Make any size tab in a moment; inserts may be changed if necessary.

EASY TO USE

See Your Stationer Today and arrange to supply every desk with time-saving MAK-UR-OWN TABS.

THE VICTOR SAFE & EQUIPMENT CO., INC.
NORTH TONAWANDA, N. Y.

(*Continued from page* 178)

phonograph record albums; luggage; ribbons; slippers; tea bags, and venetian blinds.

The order in respect to prohibited items has been amended to permit manufacturers or converters, having materials in hand expressly acquired for such purposes prior to August 1, 1943, to continue their processing until October 31, 1943. Production of these articles after that date, however, is forbidden.

The manufacture of all other articles not listed in the amended order, or not otherwise excluded, may continue until October 1, as long as paper is not used at a rate greater than during the first six months of 1943. During the final quarter of 1943, however, manufacturers may utilize only 70 percent of the tonnage of paper in producing these articles as was consumed in the last quarter of 1942.

OPA PAPER INDUSTRY ADVISORY COMMITTEES

The following industry advisory committees have been created in the paper and paper products industry to collaborate with the Office of Price Administration: Kraft Grocers and Variety Bags; Kraft Paper; Tissue Paper; Coarse Paper Merchants; Paperboard (other than Kraft); Fine Paper Merchants; Corrugated and Solid Fibre Containers; Sulphite and Bleached Kraft Paper; Folding Paper Box Manufacturing; Groundwood Specialty Papers; Writing Paper Manufacturers; Glassine and Greaseproof Paper; Newsprint Paper; Book Paper; Woodpulp; Set-Up Paper Boxes; Tubes, Cans, Cores, Drums and Pails.

SPECIALTY PAPER ADVISORY COMMITTEE TO OPA APPOINTED

Nine representative members of the Groundwood Specialty Papers Industry have been named to a Groundwood Specialty Papers Industry Advisory Committee by the Office of Price Administration.

This committee will provide a closer working relationship between OPA and the industry. While most members of the committee reside in New York or Chicago, both large and small companies in the major geographical areas of the country where groundwood specialty papers are produced are represented.

Groundwood specialty papers, which have just been taken from the General Maximum Price Regulation and put under a new regulation, Maximum Price Regulation No. 449 (Groundwood Specialty Papers) are types of papers, excluding newsprint and other specific exceptions, which contain 26 percent or more of groundwood fiber and which are prepared for one or more of a large variety of end uses, the majority of which fall within the field of printing and publishing.

The committee follows: Fred Cole, Sales Manager, Fraser Industries; Fred Mears, Assistant Sales Manager, Great

(*Continued on page* 182)

Prominent Users of Strathmore Letterhead Papers: No. 40 of a Series

does your letterhead

carry your message?

Pan American Airways opened new world horizons with their first overseas flight in 1927. Today, with 120,000,000 miles of wartime and civilian flying behind them, Pan American plans for post-war 10-hour passenger service from New York to London, 22 hours to Buenos Aires, 24 hours to China and Australia.

Their letterhead, on Strathmore paper, carries the message of leadership. Select YOUR letterhead to express the standing and reputation of your company. A letter on finest Strathmore paper costs only a small percent more than one on the cheapest paper you might buy! Write for analysis of letter costs.

Strathmore Papers for Letterheads: Strathmore Parchment, Strathmore Script, Strathmore Bond, Strathmore Writing, Thistlemark Bond, Bay Path Bond and Alexandra Brilliant.

STRATHMORE *MAKERS OF FINE PAPERS*

Strathmore Paper Company, West Springfield, Massachusetts

PAPER IS PART OF

TODAY'S PICTURE

Current Strathmore advertising points out how essential paper is to the war effort, features leading industries that use Strathmore in their Victory programs, stresses the point that good letterheads help maintain the reputation every firm is guarding today.

★ ★ ★

This series appears in:

FORTUNE
TIME
BUSINESS WEEK
UNITED STATES NEWS
NEWSWEEK
FORBES
ADVERTISING & SELLING
TIDE
PRINTERS' INK
SALES MANAGEMENT

THE NEW HILL BUSINESS CARDS CAME IN TODAY!

No wonder he feels like an archangel—this purchasing agent gets the best business cards on the market and still saves time, money, and record-keeping detail.

He makes no investment in master stock, needs no inventory records—pays-as-he-goes, yet gets a wholesale price. And it's quick service, too. One-color orders go out the same day they reach our plant . . . *direct to the user* to eliminate double handling. The cards are packed in our Special 25-card Economy Cases to keep them clean and fresh and cut waste from dog-earred throw-aways.

●

Send us your approximate yearly quantities of business cards and letterheads with a sample of each—we'll send estimates and suggestions for their improvement at no obligation.

R. O. H. HILL
INCORPORATED
270 Lafayette St., New York 12, N.Y.
Telephone CAnal 6-6340

Makers of
FINE BUSINESS CARDS AND LETTERHEADS
Since 1914
ENGRAVED OR THERMOGRAPHED

TISSUE REGULATIONS CHANGED

Seven Changes Largely of Technical Nature in Amendment No. 5 to MPR No. 266

Seven changes, mainly of a technical nature, in the tissue paper products regulations have been announced by the Office of Price Administration.

These changes, embodied in Amendment No. 5 to Maximum Price Regulation No. 266 (Certain Tissue Products) effective September 14, 1943, follow:

1. A manufacturer who during the October 1-15, 1941 base period had an established practice of making a charge for less-than-carload lot shipments in excess of his price for carload shipments may add to the carload ceiling the lesser of (1) the differential employed in the base period, or (2) 5.05 per cent, plus the difference between the carload and less-than-carload rate of freight. This incorporates a long-established practice in the industry.

2. The provision providing relief for signatories of voluntary agreements is revoked. All eligible manufacturers have obtained the relief provided for in this section.

3. The definition of manufacturer is amended to include agents of manufacturers. Previously agents were not specifically provided for although most of them sold at manufacturers' ceilings as today's amendment now permits.

4. Differentials for four inch width interfolded toilet tissue are set at 35 cents per case of 100,000 sheets below the ceiling for the standard four and a half inch width, or that differential customarily employed by the manufacturer during the October 1-15, 1941 base period, whichever is greater. This has been done to aid the War Production Board's program of fibre conservation by reducing the differential from the "proportionate" reduction formerly required which averaged 65 cents per case. The increase now permitted in maximum prices for four inch width affects a very small part of total toilet tissue sales. As interfolded tissue is a service item and not sold at retail, this action will not affect the cost of living.

5. Continuous unsheeted roll towels used in controlled delivery cabinets and having special metal or wood cores or ends are granted a differential of 20 cents per case over the regular ceiling. This differential is granted to take care of additional costs peculiar to the manufacture of these towels, which constitute an economical form of industrial towel service. They are not sold at retail and the differential granted today will have no effect on the cost of living.

6. The provision is revoked permitting the addition of extra packing charges on toilet tissue put up especially for the Armed Forces. Supplementary Order No. 34 will now govern the addition of these charges, bringing the procedure in line with that generally employed by the Office of Price Administration.

7. The distributors' provisions regarding mark-ups have been clarified by slight changes in the wording.

VISIBLE RECORD EQUIPMENT ADVISORY COMMITTEE

The War Production Board recently announced the formation of the Visible Record Equipment Industry Advisory Committee, with the following personnel: Government Presiding officer, W. A. Hauck. Committee members: Charles E. Attwood, Acme Visible Records, Inc., Chicago, Ill.; David Cameron, The McCaskey Register Co., New York, N. Y.; T. E. Miller, The Shaw-Walker Co., New York, N. Y.; Wm. M. St. John, Yawman & Erbe Mfg. Co., Rochester, N. Y.; A. N. Seares, Remington-Rand, Inc.; Buffalo, N. Y.; J. S. Sprott, The Globe-Wernicke Co., Cincinnati, O.; Roy E. Wells, Art Metal Construction Co., Jamestown, N. Y.

SPECIALTY PAPER COMMITTEE TO OPA APPOINTED

(*Continued from page* 180)

Northern Paper Co.; Arthur Schroeder, President, Pejepscot Paper Co.; Paul Mahony, Sales Manager, Groundwood Division, International Paper Co.; and E. G. Murray, Sales Manager, Groundwood Division, St. Regis Paper Co., all of New York; George Fay, Sales Manager, Escanaba Paper Co.; R. O. Warner, Sales Manager, Minnesota & Ontario Paper Co., and William Ward, Vice President, Watab Paper Co., all of Chicago; and Thomas Farwell, Manager, Ryegate Paper Co., East Ryegate, Vt.

PROPOSE SIMPLIFIED BASIS WEIGHTS FOR PAPER INDUSTRY

Booklet has been issued by the Fletcher Paper Company, Alpena, Mich., detailing plan of proposed simplified basis weights and counts for the paper industry, on basis of 25 x 40 basic size and 1000 sheet count. Briefly reviewing the trade customs on basis weight and count now accepted as standards of measure, the text states that the standards are as confusing as if we had a 12 oz., 14 oz., or 16 oz. pound, or a 1", 12" or 14" foot. "The largest paper user today, namely the United States Government," it is stated, "uses the 1000 sheet count." The 1000 sheet count is the most practical and is easier to calculate and if used universally for all grades of paper, a great step in simplification would be accomplished. In conclusion the plan says that the idea of 25 x 40 as a basic size is not new as it had been advocated many years ago. The U. S. Bureau of Standards considers it a standard. The 1000 sheets count now being used in certain grades and localities should be universally adopted. The com-

(*Continued on page* 184)

When you want to know GO TO AN EXPERT

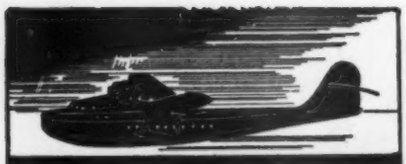
IT'S THAT WAY in buying paper, too. The best reference for Rising papers we can offer is the opinion of printers, whose reputation depends largely on the quality of the papers they use.

For years we have been supplying these paper-wise experts with fine papers for letterheads as well as every other purpose.

Today we invite you to take advantage of the prestige of Rising craftsmanship by putting your business letterhead on one of the Rising papers. Among others: Rising Bond (25% rag), Rising Line Marque (25% rag), Finance Bond (50% rag), Rising Parchment (100% rag). Prices on a par with other quality papers. The Rising Paper Company, Housatonic, Mass.

Rising Papers

ASK YOUR PRINTER—HE KNOWS PAPER



THIN PAPERS
Reduce
TYPING, MAILING
and FILING COSTS

Specify one of
ESLEECK
THIN PAPERS

Ideal for Air Mail, Branch Office and Foreign correspondence.

ESLEECK MANUFACTURING COMPANY
TURNERS FALLS, MASSACHUSETTS

ROLL PAPERS
FOR ANY MAKE OF BUSINESS MACHINE

Cost You Less Through Burroughs Discount Purchase Plans

Burroughs special-formula roll papers give sharp, clean-cut type impressions. Available plain or carbonized; single or double wound; in any size or width. Save money on cash register check rolls and detail rolls, adding, accounting and other business machine roll papers, through Burroughs Discount Purchase Plans. Call your local Burroughs office or write direct to Burroughs Adding Machine Company, Detroit 32, Michigan.

Burroughs
SUPPLIES FOR BUSINESS MACHINES

(*Continued from page* 182)

bination of 25 x 40 or 1000 square inches to 1000 sheet count certainly simplifies calculations. This along with the grams per square meter tabulation enables the paper industry of the world to use universal calculations of basis weight.

"Today we have the problem of manpower shortages—a problem made more difficult because of the accuracy demanded by our industry and made again more difficult because of the lack of simplified methods in the industry which foster expensive errors and loss of time. Tomorrow we face an era of international trade which may become a problem unless our industry can devise some equitable denominator for the conversion of the "grams per square meter standard" to our own standard so that we may avoid errors because of differences in grade nomenclature."

TO AUTHORIZE INCREASE IN TYPEWRITER MANUFACTURE

Authorization to industry to increase the manufacture of typewriters to fill Army, Navy, Maritime Commission and other war orders will be issued shortly the War Production Board announces. The machines will be principally telegraphic keyboard, wide carriage and other special varieties needed for specific uses by these agencies. None will be available for civilians.

The manufacturing program covers the last four months of 1943 and the first three months of 1944. Production will be stepped up from less than one per cent of normal to approximately 9 per cent for this period. In accordance with War Manpower Commission regulations, manufacture will be confined to non-critical labor areas.

TWO-COLOR SINGLE-RUN HECTOGRAPH REPRODUCTION

Two color (single run) Hectograph reproduction, radically new feature with important wartime possibilities, has been announced by Manifold Supplies Company, Brooklyn 17, New York. This process, which applies to any spirit or liquid duplicator, does not require any extra attachment, or add to the time, effort or skill required of the operator. It is applied to a blank sheet of paper, in one run.

The great value of this patented feature to industry today is its two sharply contrasting colors. F. Dwight Foster, President of Manifold, who originated the idea, said: "Advertisers for years have recognized the great value of a second color in getting across an idea fast, in a form that the average reader could master and retain. We have found that the same principle applies just as profitably to factual material that must get quick distribution within an organization. You can put "Special," "Important," "Rush," or other imperatives on an item and yet if a war-driven employee is too tired to read it thoroughly and accurately, mistakes will happen.

"By making the special data—the different, identifying facts—stand out clearly and readably—this two color hectographic reproduction gets actual results that pressure alone could not produce. Tests among widely varying groups—production men, engineers, order clerks, salesmen, stock clerks, department heads — have given uniform findings to the effect that the data is absorbed faster and more accurately and retained longer."

FRED LUTHER WOOD

Within a month of his 84th birthday, Fred Luther Wood, Purchasing Agent, United States Envelope Co., Springfield, Mass., passed away September 4 at his home in that city. Mr. Wood had been associated with the envelope company for 64 years. He began as a shipping clerk with the Morgan Envelope Co., later merged with the United States Envelope Co., later being advanced to the position of salesman. He was made Assistant Purchasing Agent in 1903, and became Purchasing Agent in 1908. He was a member of the Purchasing Agents Association of Western Massachusetts.

OPA DEFINES "CORD OF PULPWOOD"

In recognition of the customary trade requirements for a "cord of pulpwood" in the states of Minnesota, Michigan and Wisconsin, the Office of Price Administration has revised its definition of the term in its regulation applying to pulpwood produced in these three states.

Amendment No. 1 to Revised Maximum Price Regulation No. 257 redefines a cord of pulpwood as an amount of pulpwood (whether peeled, rossed or rough) which, when properly stacked, contains not less than 128 cubic feet, plus a 4-inch allowance for trim per stick. The amendment became effective September 8, 1943.

The revised regulation priced pulpwood in terms of 128 cubic feet of wood properly prepared and stacked. Trade custom in Minnesota, Michigan and Wisconsin, however, requires a pile of wood 4 feet high and 8 feet long, made up of sticks 100 inches long to equal 128 cubic feet.

WRAPPING PAPER REMOVED FROM UNRESTRICTED LIST

The item "Wrapping Paper" was deleted from unrestricted List A of Conservation Order M-241-a, covering paper and paperboard, since it is already exempt under paragraph (a) (xiv) of the order.

WPB IS CONCENTRATING ON PAPER SHORTAGE

War Production Board is paying considerable attention to the pulpwood, pulp and paper shortage, as is indicated by two important appointments. Harold J. Boeschenstein has been designated as coordinator of WPB divisions handling paper and papermaking materials. Charles E. Adams has been named as acting chairman of an international fact-finding com-

(*Continued on page* 186)

MODERN ARMY NURSE... *Miracle of Resourcefulness*

Every good nurse is not necessarily a good *army* nurse. A nurse in "the Service" must have high resistance to fatigue and disease . . . must be able to carry out orders to a "T" . . . but even more important must have remarkable resourcefulness for acting *on her own* in strange and dangerous circumstances. And she must have a cheerfulness that sets an example for fortitude.

To find such merits combined all in one nurse means examining, pre-testing, investigating with extraordinary care.

Adirondack Bond is "picked for the job" because it's watermarked 100% sulphite bond paper that can take it to perfection—printed, typed, or written.

INTERNATIONAL PAPER COMPANY

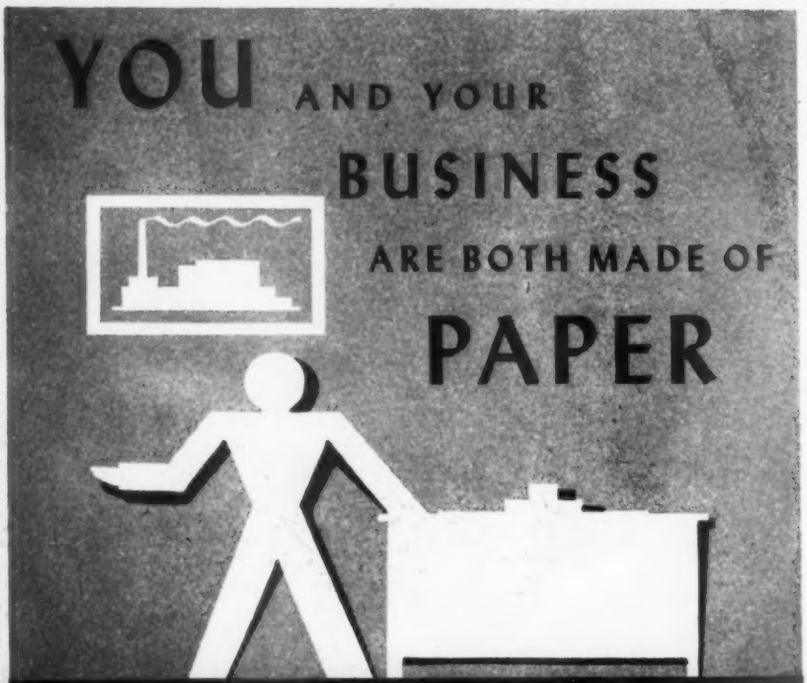
220 East 42nd St. *New York, N. Y.*

PAPERS FOR PRINTING AND CONVERTING

★ ★ ★ ★ **BACK THE ATTACK WITH WAR BONDS** ★ ★ ★ ★

BYRON WESTON CO. LINEN RECORD, EXTRA NO. 1 100% DEFIANCE LEDGER 100% WAVERLY LEDGER 75% CENTENNIAL LEDGER 75% WINCHESTER LEDGER 50% BLACKSTONE LEDGER 25% WESTON'S MACHINE POSTING LEDGER AND INDEX 50%

DEFIANCE INDEX 100% WINCHESTER INDEX 50% WESTON'S BOND EXTRA NO. 1 100% DEFIANCE BOND 100% HOLMESDALE BOND 75% WINCHESTER BOND 50% BLACKSTONE BOND 25%



Your birth, your graduation, your marriage as well as the ownership of your property and all the important facts of your life are recorded on Paper — and, the chances are, on WESTON paper.

Many facts of your *business*, too, are matters of vital record. They also need the protection of WESTON paper.

Your supplier recommends WESTON cotton fibre content papers for every business record that is *worth keeping*.

You need only remember this — if it's worth keeping, keep it on a WESTON paper.

Wartime Demands for papers of WESTON quality and endurance

are exceedingly heavy. They include map, chart, record, form, instruction book and other special service papers for army, navy, government, lend-lease and war production work.

BYRON WESTON COMPANY
Makers of High Grade Papers
DALTON, MASSACHUSETTS

WESTON'S PAPERS

WESTON PAPERS · PROTECT YOUR RECORDS

EVERY WESTON PAPER IS A COTTON FIBRE CONTENT PAPER

(*Continued from page* 184)

mittee to ascertain and report on requirements, supplies, uses, production and distribution of pulp and paper products in the U. S., Canada and the United Kingdom.

While additional materials are being secured, and production is being stepped up, it is up to the commercial interests using paper and paper products to effect the greatest possible economy to stretch the available supply as far as possible.

DIEBOLD PLANTS WIN STAR FOR "E" FLAG

Diebold, Incorporated, Canton, Ohio, formerly the Diebold Safe and Lock Company is now flying the Army-Navy "E" pennant with a white star added, denoting a continuation of the production, quality, War Bond buying, lack of absenteeism and ride sharing that won it the original award August 31, 1942.

PRINT PAPER DELIVERIES

To clarify paragraph (d) (1) of General Limitation Order L-240, which restricts the tonnage of print paper a newspaper publisher may accept any month, the War Production Board Printing and Publishing Division recently issued Interpretation No. 2 of this order.

Referring to that part of the order which permits deliveries of a fraction of a carload to be increased to one full carload in any month, it is explained that if deliveries aggregate a number of carloads plus a fraction of another carload, a publisher may carry the fraction of the carload over into his deliveries for the following next month.

"Thus", the interpretation reads, "if a publisher's quarterly quota of print paper would fill 25½ freight cars, he would be permitted to accept 8½ carloads per month. However, if he accepts only 8 carloads in the first month, he may accept 9 carloads in the next month."

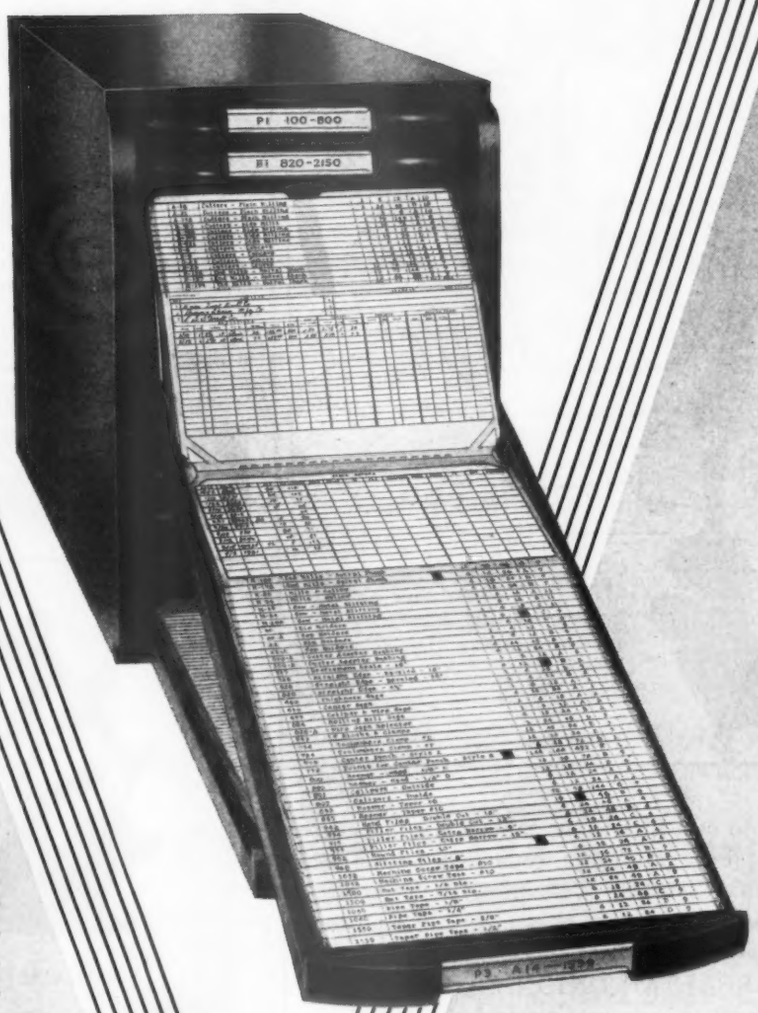
RESIN COATINGS FOR FABRICS EQUAL TO RUBBER

The synthetic resin coat is for fabrics equal or surpass rubber in wearing qualities, according to the Plastics Department of E. I. du Pont de Nemours & Co., and are lighter in weight. They resist air, sunlight, oil and grease much better than the natural product, and they even remain flexible in sub-zero temperatures.

The success of the plastic—"Butacite" polyvinyl acetal resin—on fabrics for Army raincoats led to its use also for Marine ponchos, water-proof and water-resistant suits for seamen, life rafts and belts, sleeping bags, tents, hospital sheeting, water and food bags and numerous other articles of military importance.

Most of these products, which are equally as useful in peacetime as wartime, and many new civilian products will be made from plastic-coated fabrics after the war, even though natural rubber is again plentiful. Laboratories, incidental to their war work, already have developed some new civilian goods.

Visualize for Victory with VISION



Industry and Government are working day and night for Victory . . . It's a big job and, despite many problems, it's being done well. With time far too precious to waste, nothing is more important than having facts—visual facts—instantly and accurately available, for better planning and control.

Acme VISION Record Systems will give you "fact-power" control!

And everyday, in War Plants, the Armed Services and Government Departments, Acme Visible Record Systems are proving that their use saves time—executives' time in using the records as well as clerical time in keeping the records.

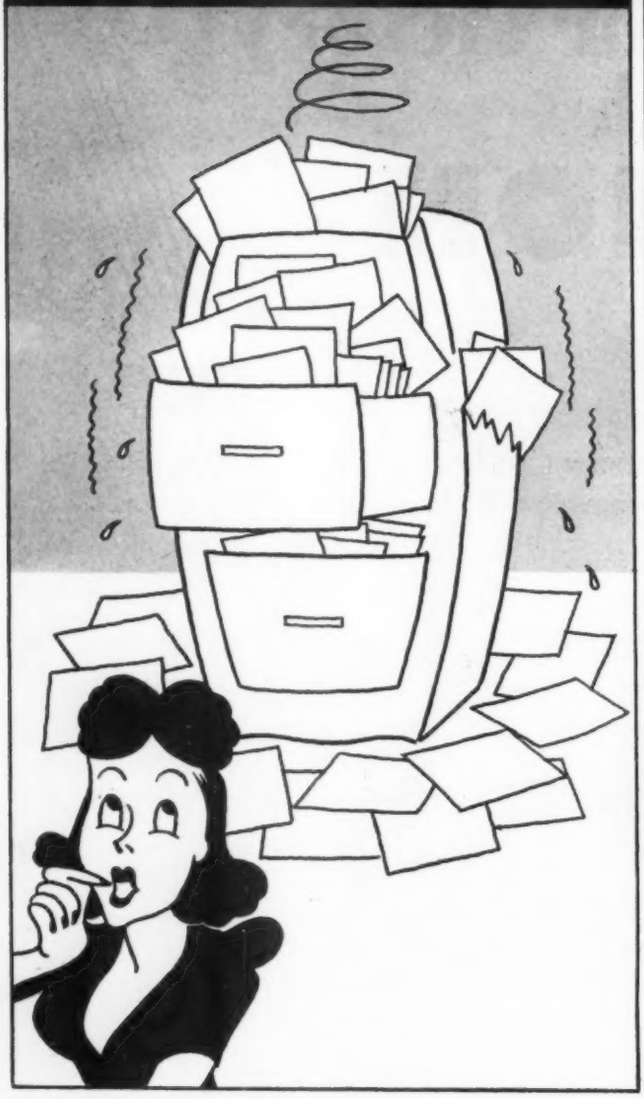
Descriptive literature is available:

PURCHASE AND PERPETUAL INVENTORY RECORDS—ask for booklet **No. 387** . . . **PRODUCTION CONTROL RECORDS**—ask for booklet **No. 417**. . . **CMP ALLOTMENT RECORDS**—ask for booklet **No. 440**. . . **MANNING TABLES AND REPLACEMENT VISUALIZATION**—ask for bulletin **No. 1938** . . . **WAR RECORDS** (various kinds)—ask for **"MANUAL OF 304 'USE-TESTED' ACME WAR RECORDS."**

ACME VISIBLE RECORDS, INC.

122 SOUTH MICHIGAN AVENUE • CHICAGO 3, ILLINOIS

OFFICE CATASTROPHE NO. 1



This is a photo of a nice filing cabinet having acute indigestion. If only all those copies of letters and reports had been on *thin paper*, the filing clerk wouldn't be in such a dilemma. Modern thin papers save postage and typing time, as well as filing space. MILLERS FALLS and GIBRALTAR ONION SKINS have long been favorites with discriminating and shrewd advertising and purchasing executives. Today we find it difficult to fill all of Uncle Sam's and regular orders, but we'll do our best. Use more thin paper!

☆ ☆ ☆

Would you like a Millers Falls Onion Skin (25% Rag) or a Gibraltar Onion Skin (100% Rag) SAMPLE BOOK?

MILLERS FALLS PAPER COMPANY
in
MILLERS FALLS, MASS.

One Thing
THE WAR WON'T CHANGE

When the war, Limitation Orders are rescinded after and **KOH-I-NOOR Drawing PENCILS** become available to everyone, there won't be any new designs or new models.

Pencil users will be chiefly interested in the life of a pencil—**its uniform quality** —its ability **to produce clear, smooth** and sharply **defined lines.**

KOH-I-NOOR will continue as it has done for more than 50 years, to deliver the same fundamental quality that has made it one of the best Drawing Pencils that money can buy.

KOH-I-NOOR Drawing PENCILS are available in 17 degrees of uniform hardness — smartly packaged — one dozen to the container.

NO. 930 AVIATOR COLORED PENCILS — A complete range of smooth working colors. Ideal for rendering, photo coloring, map work, etc. At your dealer in single colors or sets of 12 or 24 assorted colors.

SEND FOR BOOKLET NO. 11

KOH-I-NOOR

The RIGHT pencil for the RIGHT job
KOH-I-NOOR PENCIL COMPANY, INC., BLOOMSBURY, NEW JERSEY

SPEED CUTTERS

Keep Those Bostons POINTING!

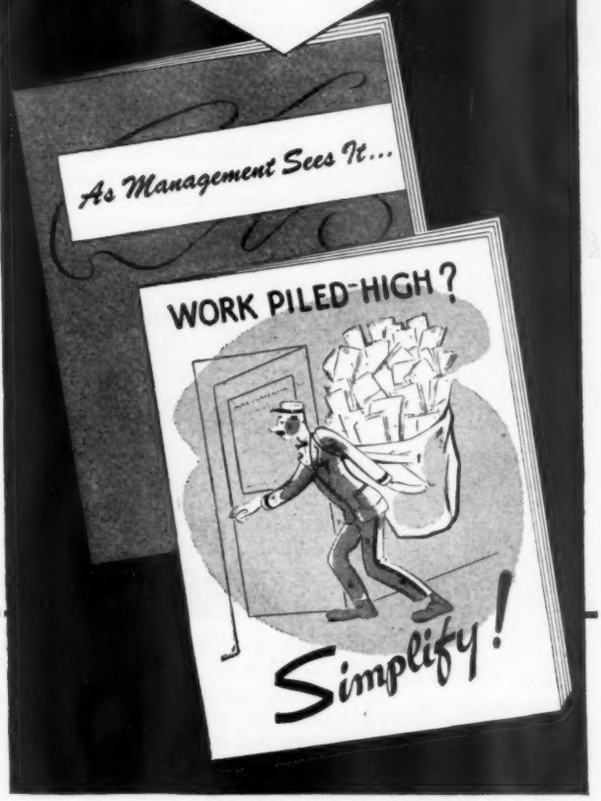
We're still trying mighty hard to resume the manufacture of BOSTON Pencil Sharpeners, and shall continue our efforts toward this end. We have manufactured, by permission of the W.P.B., a limited quantity of famous BOSTON Speed Cutters to replace the worn cutters in sharpeners now in use. Better order replacements for your BOSTONS right away while they are available.

C. HOWARD HUNT PEN CO., · CAMDEN, N. J.

BOSTON
PENCIL SHARPENERS

Solve your FILING PROBLEMS with a 3c stamp

Use it to send for these two eye-opening Booklets



Actually "hot off the press", these two books are full of *workable* ideas for you. They've been thoughtfully planned with one object in view: to place before you a comprehensive analysis of current filing problems and, what's more, *how to cure them!*

Your paper work is greater than ever... your records must be kept more available, and for longer periods... and, ten to one, you're as short of clerical help as the next fellow.

Before out-of-date and/or insufficient filing systems and supplies slow down your business operations to the point of costly inefficiency, fill out the coupon below, put it in an envelope addressed to Remington Rand, *then apply that 3¢ stamp* . . . and mail *today!*

REMINGTON RAND
BUFFALO 3, NEW YORK

REMINGTON RAND, Buffalo 3, New York.

Please send me *both* your books..."Work Piled High?" and "As Management Sees It". I understand I will be obligated in no manner.

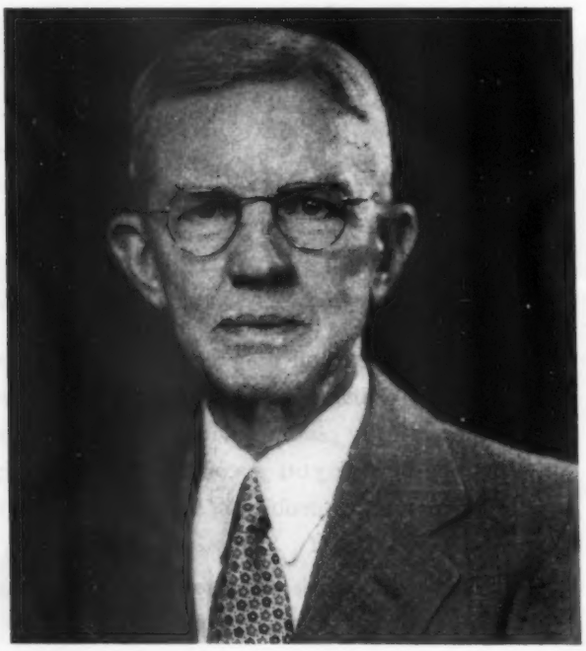
Name.....
Position.....
Firm.....
Address.....
City..... State.....

PERSONALITIES in the NEWS

FROM HORSE CARS TO STREAMLINERS

John Fleming Feted on Fiftieth Anniversary of Service With Capital Transit Company, Washington

John Fleming, Assistant Secretary and Purchasing Agent of The Capital Transit Company, Washington, D. C., who has been active in urban railroading in Washington from the days of horse cars, through those of cable and earlier electrics, to those of streamliners and gasoline buses, was honored August 25th at an informal dinner in the Mayflower Hotel given by the company management. More than 60 officers, directors and company associates were present to pay him honor in recognition of his fifty years' of service.



John Fleming, Assistant Secretary and Purchasing Agent The Capital Transit Co., Washington

Mr. Fleming went to work for the Washington and Georgetown Railroad Company on August 12th, 1893, serving as a shop apprentice and then as clerk. When the old Capital Traction Company succeeded the Washington and Georgetown, Mr. Fleming served the new company in various capacities, including those of Assistant Secretary and Purchasing Agent. In December 1933 when the present company, Capital Transit, came into existence he became its Assistant Secretary and Purchasing Agent, the position he still holds.

Under his direction the Purchasing Department has grown from a small organization to a Department that carries in stock more than 29,000 items used in the transit business. In 1919 he was one of the organizers of the Committee on Purchases and Stores of the American Electric Railway Association, now the American Transit Association, the national organization of the principal transit companys of the United States and Canada. In 1927 Mr. Fleming was made Chairman of the Committee.

Mr. Fleming is a charter member of the Association of Purchasing Agents of Washington, D. C., and formerly its vice-president.

D. A. Perkins, Purchasing Agent for the Consolidated Vultee Aircraft corporation's lakefront plant, New Orleans, has been transferred to the San Diego, Calif. division. At a farewell dinner he was presented with a pen desk set on behalf of the department personnel.

Robert T. Clayton, Roanoke, Va., Purchasing Agent for Henrico County, is reported to have resigned.

Charles Curtis, Purchasing Agent for the Great Northern Paper Co., gave an informative talk on the problems of the Purchasing Agent under present conditions, at a meeting of the Kiwanis Club, Brewer, Me. Mr. Curtis is a former mayor of Brewer.

R. K. Moore, (left) who, as reported in the September issue of PURCHASING, succeeds **E. Van Vechten** (right), resigned

as General Purchasing Agent after more than 17 years with United Air Lines, to become western representative of the Weatherhead Company at Los Angeles. Starting as clerk in the accounting department of the airline in 1928, Mr. Moore became, successively, assistant auditor at the company's Cheyenne maintenance base and assistant to the auditor of disbursements at United's general office in Chicago. Before joining United, he was with Swift & Co. in Chicago.

John R. Kennedy has been appointed Manager of Material Procurement and Control for the Columbia Recording Corp., Bridgeport, Conn., according to an announcement by J. H. Hunter, vice

president in charge of manufacturing. Mr. Kennedy has for the past thirty years been associated with the purchasing department of the RCA Manufacturing Company and its predecessor, the Victor Talking Machine Company, serving as Assistant General Purchasing Agent since 1934. He has long been an active member of the Philadelphia Purchasing Agents Association, serving on the board of directors and in other important offices. George W. Ibbs continues as Purchasing Agent for Columbia.

(*Continued on page* 192)

Sure, All Valves Look Alike

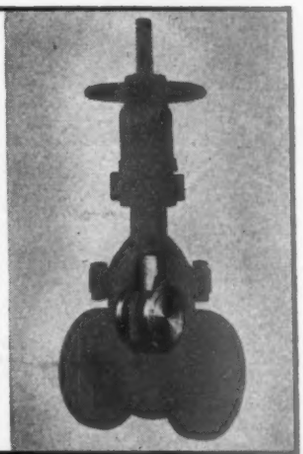
But..It's What's Inside That Counts!

Any engineer will tell you there isn't much difference in the outside appearance of most gate valves. Why should there be? It's the *inside* story that really counts. And it's that same inside story—the assembly—the simplicity of design—the rugged construction—the leak-proof machined surfaces—that has made the Darling Parallel Seat, Double Disc Gate Valve a leader in the field for more than forty years.

No. 1

THE ASSEMBLY-ONLY 4 PARTS

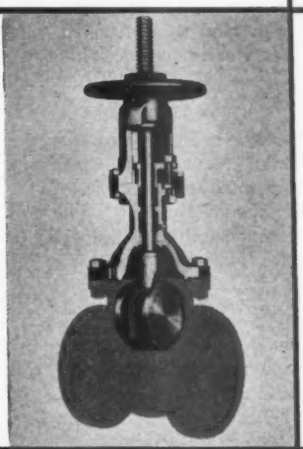
Two discs and two wedges—the entire working part assembly of a Darling Double Disc Gate Valve. There is no other valve with this design. The seats are parallel. The discs are *fully revolving*, seating in a different position each time the valve is operated.



No. 2

QUICK AND EASY TO REPACK

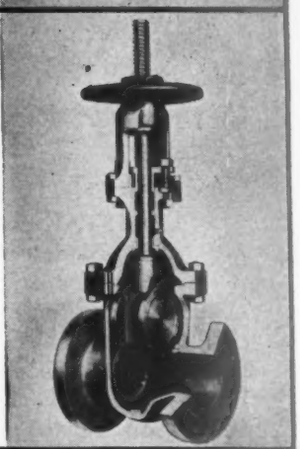
It's inside refinement like this that counts in a gate valve. The Darling Stem Collar is machined to tightly seat against the bonnet bushing. This permits *repacking* of the valve *in* service. The Valve Bonnet has two separate chambers, the lower being a condensation chamber protecting the packing above. This permits sampling or pressure relief while repacking stuffing box.



No. 3

DENSE CASTINGS THAT ASSURE GREATER STRENGTH

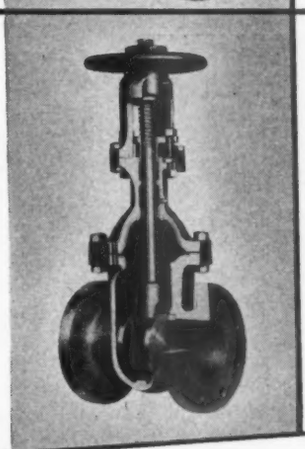
There are no "lot" testings. The body of each and every Darling Valve, like all other parts, is tested individually to its rated pressure. There are no sharp corners. Generous radii throughout eliminate casting strain and insure maximum strength. Darling Valve bodies are designed for quick, easy and inexpensive parts replacement.



No. 4

NO LEAKAGE AT ANY PRESSURE

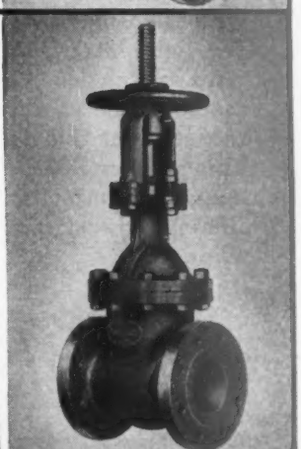
When the discs roll into place and the parts are sealed, there is no leakage. There can't be. All seating surfaces, by special Darling processes, are super-machined to a glass-like surface that assures a complete seal for any fluid or gas passing through the line.



No. 5

THERE'S A DARLING VALVE FOR YOUR TOUGHEST JOB

No matter what that tough job involves, corrosive or erosive materials, high or low pressures or temperatures, special alloys, unusual installations, severe operating conditions, where those problems occur, that's the place Darling Gate Valve design can positively prove its value. Write for the new Darling Catalog and Data Book.



Darling manufactures a quality line of longer-lasting Gate Valves. They come in Fully Revolving Parallel Seat Double Disc, also in Taper Seat—Slotted and Solid Wedge types. In service pressures up to 3000 pounds, available in Cast Iron, Bronze, Forged Steel, Cast Steel, and Corrosion Resistant Alloys. Darling also manufactures Compression Type Fire Hydrants, Check Valves, Motor and Cylinder Operated Valves, and many accessories.

DV-43-102

TRADE DARLING MARK

VALVE & MANUFACTURING CO.

WILLIAMSPORT, PA.

The STAR line of Hack Saw Blades includes a blade for any type of metal sawing. For high-speed cutting, the "Moly" Type* – the original molybdenum alloy blade – is recommended. It can be recognized by its gold finish with the name STAR in black. For light materials and awkward sawing jobs your choice should be the STAR Unbreakable Special Flexible Blade. This all-over black blade cuts like an all-hard. Its flexibility eliminates breakage and tooth strippage.

STAR has just issued a new catalogue covering the complete line of Hack Saw Blades, Frames, Power Saws, Band and Contour Saws.

CLEMSON BROS.
Incorporated
MIDDLETOWN, NEW YORK
**T. M. Reg.—Blades bearing the name "Moly" are made only by Clemson Bros., Inc. and affiliated companies.*
Makers of Hack Saws, Frames, Band Saws and Power Saws. 4769

(*Continued from page* 190)

E. B. Hill, Jr., Boulder, Colo., has been appointed Purchasing Agent for the Metals Reserve Tungsten depot at the plant of Boulder Tungsten, Mills, Inc.

Cliff Dunham, Purchasing Agent, Willamette Hyster Co., Portland, Oregon, is in charge of buying from new office es-

tablished by the company in the LaSalle-Wacker building, Chicago, for the purpose of having closer contact with eastern sources of supply. Mr. Dunham was transferred from Portland to Peoria, Ill., in 1940 to take over Purchasing activities at that plant.

Maurice G. Postley, secretary of the Board of Education, New York, since 1936, has been appointed to the post of Superintendent of School Supplies. The post carries the responsibility of supervising the purchase of some $6,000,000 worth of material.

Paul L. Goldstrom, formerly Purchasing Agent for the Brown Instrument Company, Philadelphia, Pa., has been named vice president in charge of production.

He recently celebrated his 20th year with the company, and for the past two years has been serving as assistant general manager. The Brown company, which manufactures a complete line of industrial measurement and control instruments, is a division of the Minneapolis-Honeywell Regulator Company.

W. J. Waymack, Assistant General Purchasing Agent of the Reynolds Metal Company, Richmond, Va., recently addressed a meeting of the Optimist Club at the Hotel Marshall in that city on the subject "Reynolds Metals at War."

E. A. Herr, Purchasing Agent for Servel, Inc., Evansville, Ind., is instructing a course in purchasing at Evansville College, affiliated with the University of Indiana.

J. O. Porter, head of the Purchasing Division, Birmingham (Ala.) Ordnance District, who has placed millions of dollars of war contracts in five Southern states, has resigned because of the press of his private business interests. He was formerly vice president of the Bibb Manufacturing Co., where for 28 years he supervised the purchasing for the several mills of that organization.

B. M. Horter has been named Purchasing head for Cutler-Hammer, Inc., Milwaukee, Wis., manufacturers of motor

control apparatus, succeeding F. S. Wilhoit who has retired after 41 years of service with the company. He will have direct supervision of all purchasing activities.

A. G. Ensenat has been appointed Purchasing Agent of the Mississippi Shipping Company, New Orleans, La., succeeding J. W. Richards who was promoted to assistant operating manager.

Jack M. Little has been made Assistant Purchasing Agent, Southern Aircraft Corporation, Garland, Texas.

William H. Morris, Purchasing Agent, Wilson H. Lee Company, Orange, Conn., has resigned after 42 years of service with the company, being one of the oldest employees in point of service with the company. His home is in West Haven, Conn.

Verne O. Gehringer, Purchasing Agent, San Diego County, California, is the author of an interesting article in the August issue of *Better Roads* on "Buying for a Big County's Needs." Mr. Gehringer briefly reviews the organization of his department, Centralized Purchasing being established in 1930, and its activities especially from the standpoint of the county highways. Concluding his article he states: "During the years our purchasing department has been in operation, we have

(*Continued on page* 194)

All in the Same Boat!

WHEN the butcher says, "No meat today!" and the garage posts a "No Gas" sign, none of us likes it . . . but why cuss out old friends?

After all, it isn't their fault. Blame it on the Axis, the Black Market, or whom you will . . . but not on Joe the butcher, nor Fred the garageman. They gave you top-notch service when they could, and some day (soon, we hope) they will do your bidding again . . . with a smile!

Meanwhile, nothing would please them more than to fill your platter and gas tank — with no questions asked or coupons required.

Try to think of it that way the next time a supplier swallows hard and says, "Sorry, . . ." Remember, we are all in the same boat and can get back to solid ground more quickly by pulling together.

NATIONAL ADHESIVES
DIVISION OF
NATIONAL STARCH PRODUCTS INC.
820 GREENWICH STREET, NEW YORK 14, N. Y.
CHICAGO — PHILADELPHIA — BOSTON — INDIANAPOLIS — SAN FRANCISCO

Knocking a chip off General Sherman's shoulder

...with an Armour Fibre Combination Sanding Disc!

JUST a hair-line scratch on a vital tank part can start a fatal fracture. Yet, in battle, every working part absorbs brutal punishment . . . must withstand the severest strains. That's why fighting American tanks . . . like the General Shermans . . . can not leave the factories until valves, gears, rods are ground to a glass-like smoothness.

From treads to turrets American tanks are fitted with a watchmaker's precision. Armour's Fibre Combination Sanding Discs are helping to *get* this flawless fit by polishing parts precisely and quickly!

Coated with hard, razor sharp aluminum oxide, Armour's Discs cut more evenly, with less heat, in less time! Aluminum Oxide's great strength and keenness results from processing in electric furnaces.

You can depend upon Armour's Discs because each particle of grit is cemented . . . for keeps . . . to the cloth and fibre backing with a special Armour glue.

Find out . . . today . . . how Armour's full line of abrasives can help lick your production problems. Call your Armour branch or write to Armour Sandpaper Works, Chicago. We'd welcome the opportunity to talk with you about your abrasive problems — because we believe there's an Armour abrasive tailor-made to do a job faster and more efficiently.

ARMOUR SANDPAPER WORKS

Division of Armour and Company

1355 WEST 31ST STREET • CHICAGO, ILLINOIS

(*Continued from page* 192)

always tried to deal fairly with all vendors. All transactions have been open and aboveboard. We know that we are reaping our reward for this from the manner in which vendors are coming to our assistance now that materials are scarce."

Alexander K. Ginsburg, for 14 years Purchasing Agent and traffic manager of the L. H. Butcher Co., Los Angeles, is now engaged in full-time practice of law.

G. W. Sands, Purchasing Agent, Elizabeth Arden Sales Corp., New York, N. Y., is one of fourteen officials of cosmetic manufacturing firms named by the Office of Price Administration, Washington, to serve on its industry advisory

committee on cosmetics. Mr. Sands was formerly Purchasing Agent for the Sonotone Corporation, New York, following which he held a similar position with the House of Pinaud, French perfumers. He joined the Elizabeth Arden organization in 1941. He has been active in contacts with branches of the War Production Board and Office of Price Administration, and supervised contract activities with the Marine Corps and Medical departments of the United States Army and Navy. In the early years of his professional career Mr. Sands prepared for the church and spent six years in the pulpit as an active lay-minister.

Fred MacGougan, formerly Purchasing Agent for the West Coast Telephone Company, Everett, Wash., and later district manager at Marshfield, Ore., has been appointed Everett District Manager of the company.

C. A. Sanders succeeds Arthur J. Moir as Purchasing Agent for the Olympic Hotel, Seattle, Wash.

Donald C. Raymond has been appointed Purchasing Agent for the Nordby Supply Company, Seattle, Washington.

Henrietta O'Callahan has been appointed Purchasing Agent for the Hotel One Fifth Avenue, New York, N. Y.

Herbert R. Hanson has resigned as assistant director of the materials division of the Petroleum Administration, Washington, D. C., to return to his former position as Purchasing Agent for the mid-

(*Continued on page* 198)

For All Types of Wiring

FLAMENOL*

Small Diameter

BUILDING WIRE

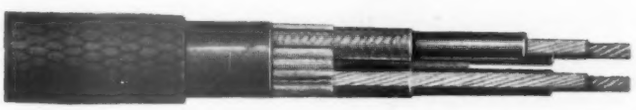
FLAMENOL BUILDING WIRE, TYPE SN

Flamenol thermo-plastic insulated small-diameter wire, Type SN, is available in sizes 14 to 1,000,000 CM. (Resins are now permitted for electrical conductor insulation wherever copper is allocated.) Its small diameter, comparatively light weight and smooth finish make it easy to handle. It will give long dependable service.

Flamenol Building Wire was developed before the war. It has been used for a number of years in all sorts of buildings. *It is ideal for maintenance work, for rewiring or for new wiring.* It is approved by the Underwriters'. Its insulation is superaging, high in dielectric and mechanical strength, flame retarding and resistant to oils, moisture, acids, etc.

FOR FURTHER INFORMATION on Flamenol Building Wires, Loom Bus-drop Cable, Conduits or Wiring Devices see the nearest G-E Merchandise Distributor or write to Section CDW1037-77, Appliance and Merchandise Department, General Electric Co., Bridgeport, Conn.
*Reg. U.S. Pat. Off.

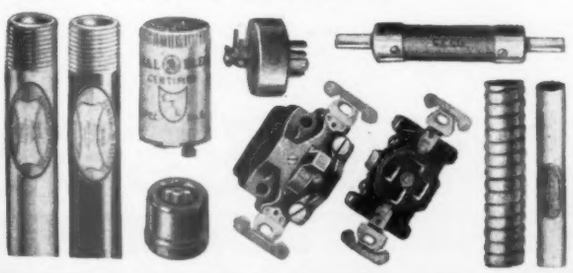
G-E LOOM BUS-DROP CABLE



G-E Loom Bus-Drop Cable can be hooked up quickly from LVD or bus-duct systems to machines. It is flexible and easy to handle. Use it for maintenance work, rewiring or new wiring. This is rugged cable and will give long service. It will withstand vibration and rough usage.

G-E CONDUITS AND WIRING DEVICES

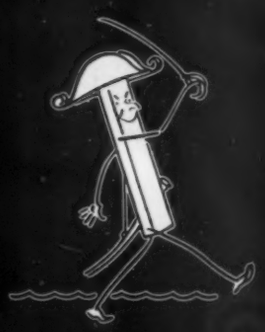
General Electric also offers for war wiring needs: G-E White hot-dipped galvanized conduit and G-E Black enamelled conduit, EMT, flexible metal conduit and hundreds of switches, lampholders, outlets, fuses, etc.



GENERAL ELECTRIC

"TOPS" to see by...and redesigned to WPB limitations,

The WAKEFIELD ADMIRAL



A CERTIFIED FLEUR-O-LIER

For war plant office or drafting room

Redesigned to meet the metal weight-limitations of WPB, the Admiral is a natural for fluorescent lighting in offices and drafting rooms essential to the war effort. Sales require at least an A-1-j priority.

Made largely of wood, the Admiral conserves war materials and provides high intensity diffused lighting that helps office people handle today's heavy paperwork faster . . . with less eyestrain and fatigue.

It puts 90% of its light *down* on desk-tops or boards, allows the rest to go upward to avoid ceiling contrasts. That makes it especially effective for work that involves critical seeing or for office space with poor ceilings. Incidentally, the Admiral's basic design has already been well tested by users, since only slight changes have been necessary to meet WPB requirements.

The Admiral is available in two, three and four lamp units. Let the Admiral help you speed war production by speeding your paperwork. Write for details.

Back the attack with War Bonds

THE F. W. Wakefield BRASS COMPANY

RED SPOT LIGHTING FOR COMBAT OPERATIONS AND WAR PRODUCTION

VERMILION, OHIO

LINE OF LEAST RESISTANCE

At American Central we found it under the simple formula of "knowing how".

★ ★ ★

That, plus energy and imagination, put our production line in jeeps months ahead of schedule. Forty-six days from the original order to the loading platform.

★ ★ ★

With plane wings, manifolds and trailers we have repeated the story.

★ ★ ★

Someday these same facilities will be used for peacetime purposes. That's when the American home will get to know American Central better.

AMERICAN CENTRAL
MANUFACTURING CORPORATION
CONNERSVILLE · INDIANA

(*Continued from page* 194)
continent area, Superior Oil Co., Houston, Texas.

Seavey D. Morse is now full-time Purchasing Agent for the Gavitt Manufacturing Co., Brookfield, Mass., a position which he held during the summer months. He resigned as principal of the Brookfield High School to devote full time to his new position.

FREE BOOKLETS ON ELECTRONICS and CMP Check "Know-How" on Pages 10-12-14-16

AMONG THE COMPANIES YOU BUY FROM

T. H. McSheehy has been made sales manager, Wire Rope division, Wickwire Spencer Steel Co., New York, N. Y.

Dr. John H. Long will be in charge of a Sales Research Division established by the Hercules Powder Co., Wilmington, Del., to investigate new markets and to study the needs of industries served by the company.

Edgar G. Warren of Philadelphia has been assigned by the Pennsylvania Salt Manufacturing Co. to the Heavy Chemicals division to take over the Philadelphia territory which was formerly covered by Lieut. E. M. Wilson before he entered military service.

The Timken Roller Bearing Co. announces the appointment of W. H. Richardson as general manager of all activities of all divisions of The Timken Company on the

entire West Coast and in the Orient. He will make his headquarters in San Francisco. Prior to this appointment he was assistant general sales manager of the company, and has been giving much study to the development of post-war markets.

Ralph C. Stuart has been named manager of the Lamp division of the Westinghouse Electric & Mfg. Co., with headquarters in Bloomfield, N. J. He will have charge of all activities of the division, including sales, illumination engineering, district office activities, as well as manufacturing and engineering in the division's five plants in New Jersey and West Virginia.

K. R. Beardslee, for the past seven years, general sales manager for Carboloy Co., Detroit, Mich., has been named vice

president in charge of sales. He is a member of the Wire Association, the American Society of Tool Engineers, a director of the Detroit Sales Managers Club and president of the Lochmoor Club.

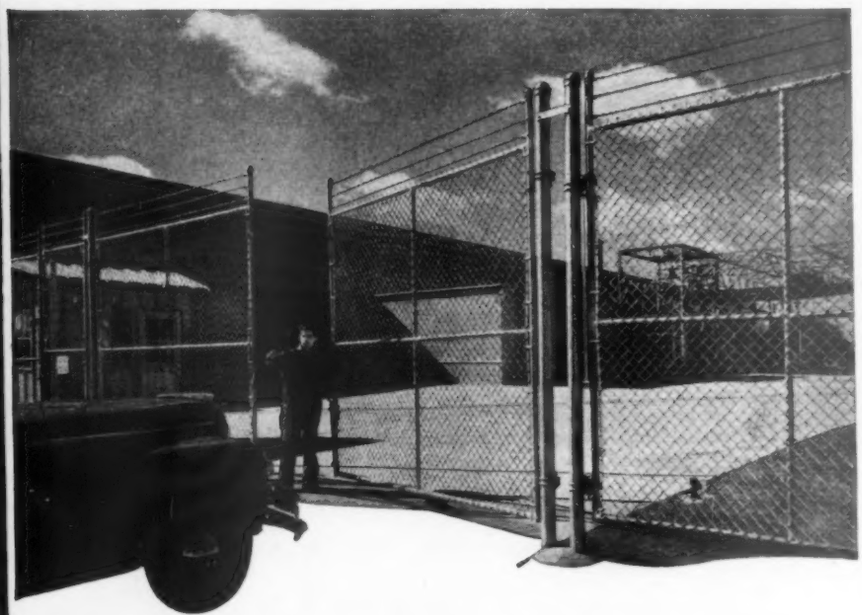
Thomas R. Coffey has been appointed manager of sales of the Wisconsin-Minnesota district by Globe Steel Tubes Co., with headquarters at Milwaukee.

Cecil Davey has been elected vice president and general manager of the Everlasting Valve Co., Jersey City, N. J.

(*Continued on page* 200)

PAGE FENCE

America's First Wire Fence — Since 1883



Safeguard Vital Operations

● To an extent greater than ever before, America is learning the importance of protecting production personnel, facilities and materials. Sturdy, long-lasting fence supplies that essential need, and on its service and quality records, Page Fence is recommended for trustworthy safeguarding. If your property does not have this protection, plan for it now and be ready when material is available. Send for copy of FENCE FACTS containing valuable information and name of our Association member nearest you. Consult this factory-trained fence expert. Address PAGE FENCE ASSOCIATION, Headquarters: Monessen, Pa.

PRODUCT OF PAGE STEEL & WIRE DIVISION — AMERICAN CHAIN & CABLE COMPANY, INC., BRIDGEPORT, CONN.

★ ★

ORDNANCE WRAPS

GRADES A, B, C.

CONFORMING TO FEDERAL SPECIFICATIONS AXS-840—REVISION 1.

★ GREASEPROOF

★ MOISTUREPROOF

★ WATERPROOF

★ LAMINATED

WRITE FOR SAMPLES

NASHUA GUMMED AND COATED PAPER COMPANY

NASHUA, NEW HAMPSHIRE

★ ★

5 AMPCO METAL Applications in The Army Sikorsky Helicopter

. . . to assure safe, reliable performance

In advanced engineering development — such as this new sensational aircraft design — Ampco Metal receives generous recognition, indicating the basic importance of this alloy of the aluminum bronze class. Modern design calls for modern alloys — and Ampco bronzes have earned the regard of design engineers in the aviation field because of exceptional performance.

Throughout all industry, parts of Ampco Metal are doing valiant service. In aircraft, ordnance, machine tools, marine service, Ampco Metal meets gruelling service conditions — proves its high strength, hardness, long-wearing characteristics, and general all-around versatility.

Investigate Ampco Metal for use in your equipment — and enjoy the satisfaction and prestige that comes through the "discovery" of a bronze that really solves your metal problems. Ask for free bulletin, "File 41 — Engineering Data Sheets."

AMPCO METAL, INC.

DEPARTMENT PA-10 MILWAUKEE 4, WISCONSIN

AMPCO METAL

THE METAL WITHOUT AN EQUAL

(*Continued from page* 198)

Solar Manufacturing Corp. and Solar Capacitor Sales Corp., announce the removal of general offices from Bayonne, N. J., to 285 Madison Avenue, New York 17, N. Y.

John M. McKibbin, manager of the Application Data and Training department of the Westinghouse Electric & Mfg. Co.,

has received his company's highest honor, the Order of Merit, for distinguished service, to his company. He was presented with a bronze metal award bearing a silver "W" and the inscription "Whom his fellow men delight to honor," by Vice President B. W. Clark.

Paul Mayfield, director of sales of the Naval Stores Department of Hercules Powder Co., Wilmington, Del., has been appointed assistant general manager.

Dan Shaitberger has been appointed sales manager for the Northern Engineering Works, Detroit, Mich. He has been with the company for 16 years.

Kurt W. Renson, industrial chemist, has been appointed to the Los Angeles laboratory staff of Turco Products, Inc. He

was graduated in 1930 from the College of Industrial Chemistry in Vienna, and is a member of the American Chemical Society.

John J. Nielsen has been named plastics specialist for the Los Angeles area by the Westinghouse Electric & Mfg. Co., being transferred from Trafford, Pa., where the company manufacturers Micarta, a laminated phenolic plastic.

Charles G. Berwind has been elected as a director of The Pennsylvania Salt

(*Continued on page* 202)

HELPING BOOST THE BOMBER

BIRTH RATE

How Cardox Systems Protect War Industries

- **Timed discharges, as needed, through built-in piping systems . . . supplied instantly from a single storage unit holding tons (if required) of liquid Cardox CO_2.**
- **Mass discharge of Cardox CO_2 "knocks out" fire, by . . .**
- **Reducing oxygen content of the atmosphere below the concentration necessary for combustion, and . .**
- **Cooling combustibles and fire zone below ignition temperature . . .**
- **Extinguishing fire quickly and completely *without* damage from extinguishing medium.**

CARDOX—CO_2 Systems with Enhanced Fire Extinguishing Performance

A. Uniformity of CO_2 characteristics.

B. Extinguishing medium with uniformly greater cooling effect.

C. Accurate projection of CO_2 through greater distances.

D. Timed discharges, as needed, through built-in piping systems . . . supplied quickly from a single tank holding tons of liquid Cardox CO_2.

• Before a Flying Fortress . . . or any other war plane . . . takes to the air, an amazing number and variety of parts must be fabricated, assembled and tested. Should fire occur anywhere along the line . . . throwing production schedules out of time . . . the bomber birth rate is likely to take a dangerous nose dive.

There are Allied planes making it tough for the Axis today that wouldn't be in the air except for the fire extinguishing performance provided by Cardox Fire Extinguishing Systems.

Engineered applications of Cardox Systems are guarding against delay of vital war industry—for example, in plants producing:

Airplanes, Aviation Engines, Aviation Carburetors, Airplane Parts, Engine Parts, Plastics, Rubber Products, Processed Fabric, Tanks, Tank Engines, Cold Strip Steel, Armor Plate, Forgings, Solvents, Motor Fuel, Electric Power.

Cardox Fire Extinguishing Systems give a maximum of protection . . . guarding *time* as well as equipment . . . by providing (1) immediate extinguishment by cold, inert carbon dioxide, which quickly smothers and "cools out" large or small fires; (2) elimination of damage by the extinguishing medium means machines and materials are usually back in production quickly.

Today Cardox is concentrating its engineering and manufacturing facilities on two vital phases of America's current emergency: (1) The design and manufacture of Cardox Fire Extinguishing Systems needed by a wide range of war industries to maintain and increase the birth rate of battle equipment; (2) working with industry on plans to increase the efficiency of fire protection both today and after the war.

If you would like more information, write on your company letterhead for Bulletin 25103

CARDOX CORPORATION
BELL BUILDING • CHICAGO, ILLINOIS

***District Offices in* New York • Washington Detroit • Cleveland • Atlanta • Pittsburgh San Francisco • Los Angeles • Seattle**

MASS DISCHARGE OF CO_2 · ENHANCED COOLING EFFECT · CENTRAL STORAGE UNIT · AMPLE CO_2 RESERVE · ENGINEERED SYSTEMS · MANUAL OR AUTOMATIC CONTROL

CARDOX

NON-DAMAGING FIRE EXTINGUISHING SYSTEMS

JOMAC HEAT-RESISTING, LONG-WEARING GLOVES

They are proving themselves in hundreds of shops where workers must handle metals too warm to touch. The remarkable Jomac Fabric is a loop-finished cloth with air-cell "cushions" which allow breathing-space and an easy dissipation of heat. Jomac's loop finish gives extra protection to hands, extra *long wear.*

JOMAC REGULAR INDUSTRIAL GLOVES

A modern work-glove that is semi-heat resisting and gives as much as *7 times the service* of ordinary work gloves. Jomac Fabric and its hidden lock-stitch keep the thick pile in place and provide extra strength and wear. Jomac Gloves can be washed repeatedly, *kept clean* . . . and thus minimize the dangers of dermatitis and other skin infections.

TEST THEM!

Just try JOMAC GLOVES on your stiffest jobs. Test them for heat-resistance, for wear, for washability, for economy, for *increased production.* Write for full details.

JOMAC WORK GLOVES

C. WALKER JONES CO.

6135 N. Lambert St., East Germantown, Philadelphia 38, Pa.

(*Continued from page* 200)

Manufacturing Co., Philadelphia, Pa., to fill vacancy caused by the death of Wm. M. Potts. He is vice president and director of the Berwind-White Coal Mining Co.

Howard W. Weber has been made sales manager of the wire and cable department of the United States Rubber Co., New

York, N. Y. He has been with the company since 1934, having joined the sales department at that time.

R. M. Allen, general sales manager, Allegheny Ludlum Steel Corp., announces the promotion of J. W. Burdick to the post of assistant district manager of the Company's Springfield, Mass. office, and the appointment of J. T. Purtell as salesman in the Springfield district. Mr. Purtell was assistant manager of orders at the company's Watervliet, N. Y. plant.

Mills Industries, Inc., is now the corporate name of Mills Novelty Co., 4100 Fullerton Ave., Chicago, Ill.

Harry T. Worthington has been appointed general manager of The Beardsley & Piper Co., Chicago, manufacturers of

foundry equipment, and will direct special attention to product development and sales. He was formerly a sales and production executive with Manning, Maxwell & Moore.

Leroy K. Behr has been appointed district manager in Philadelphia for the Abrasive Division by Norton Co., Worcester, Mass., succeeding the late Allan Seymour. For the last three years he has been abrasive engineer for eastern Massa-

(*Continued on page* 204)

PLASTICIAN *

Perhaps molded laminated plastics is the answer to your problem. Cold molded plastics may be the best bet. Are you pondering between a choice of compression molded urea and injection molded methacrylate? The Plastics Divisions of the General Electric Company manufactures compression, injection, transfer and cold molded plastics. They also mold and fabricate parts of laminated sheets, tubes and rods; and since the beginning of war, G-E has been low pressure molding large structural pieces. Because General Electric manufactures plastics by all these methods, you can be sure your application is made the proper way from the proper material.

G-E engineers and designers are *your* engineers and designers. These plasticians will tell you if a combination of metals and plastics is the answer to your problem. They will frankly tell you if the colorful ureas, the sleek phenolics and the versatile thermoplastics, or the heat resisting cold molded plastics are not for you. Let these plasticians help you, write Section C-10, One Plastics Avenue, Pittsfield, Mass.

192,000 employees of the General Electric Company are on their jobs producing more goods and buying over a million dollars of War Bonds every week to hasten victory.

Listen to the news on the WORLD TODAY each week-day evening, CBS, 6:45 P.M., E.W.T. On Sunday, listen to the HOUR OF CHARM on NBC, 10:00 P.M., E.W.T.

PLASTICS DIVISIONS

GENERAL ELECTRIC

PD-10

* One Who KNOWS Plastics

ONLY THE BEST
deserves such packaging

There it is—a beautiful cutting tool, accuracy personified in every shining thread, inspected for the last time and ready to ship. Shall this distinctive Threadwell Tap be packed only in ordinary wrappings? . . . No! Each Threadwell Ground Thread Tap is enclosed in a transparent plastic tube that keeps out dirt, that protects each thread with a rigid armor of plastic, yet a wrap that allows instant identification of size and style. . . . You can tell a Threadwell Tap by the dot on the shank. You can tell it by the individual plastic container. And you can tell it by its outstanding performance on your production line. Have you *"changed to Threadwell"?*

EXPORT STOCKING DISTRIBUTORS
CANADA: Bridge Machinery Co., Montreal
ENGLAND: Skylon Ltd., London

Threadwell
"TAPS OF DISTINCTION"

THREADWELL TAP AND DIE CO., GREENFIELD, MASS., U.S.A.

(*Continued from page* 202)

chusetts and Maine with headquarters in Boston. He is succeeded in Boston by John C. Ewer, and the latter is succeeded by C. Barnard Price, Jr.

The Weatherhead Co., Cleveland, manufacturers of fittings, hose assemblies, hydraulic devices and other essential machine parts has undertaken a nation-wide advertising campaign in 17 metropolitan newspapers to tell the general public of the great contribution its employees are making toward speeding victory and to urge labor and industry at large to sustain its mammoth war production quotas.

Walter A. Coogan, director of the International division of Sylvania Electric Products, Inc., has been re-appointed chairman of the export committee of the Radio Manufacturers Association for the coming year.

E. H. Howell, manager of General Electric's Toledo Office for the past 13 years has been appointed manager of the company's Meter and Instrument division.

He succeeds W. F. Howe, a veteran of 43 years' service who is relinquishing his responsibilities, but will continue as a full-time consultant. **S. J. Tombaugh** has been named manager of the Toledo office. Previously he was a sales engineer at Cleveland.

Howard R. Rusk is in charge of Aircraft Parts division recently announced by The Cleveland Cap Screw Company, headed and threaded products manufacturers, Cleveland, Ohio, which has adapted a portion of its facilities for making precision products to meet the demand for aircraft fasteners.

Devoe & Raynolds Company, Inc., announce the formation of a consumer paint buying committee to study post-war trends in trade sales, headed by Kenneth Woods, National Accounts division, Painter & Maintenance sales manager, who will be assisted by Renshaw Smith, Jr., trade sales manager.

Hercules Powder Co., Wilmington, Del., announce the election of Philip B. Stull, general manager of the Paper Makers Chemical department, as vice president, and the appointment of Ralph B. McKinney to succeed Mr. Stull.

Duraloy Co. of Scottdale, Pa., announces the appointment of Robert Onan as its sales representative in the Chicago area, with offices in the Wrigley building, Chicago. Kilsby & Graham, Los Angeles, Calif., have been made agents for the California area.

Malcolm G. Kirk has been promoted to the managership of the American Equipment Divn. (Norristown, Pa.) of the Pittsburgh Screw and Bolt Corp., succeeding John A. Longacre who recently retired.

John G. Seiler has been elected vice president of Tube Turns, Louisville, Ky.,

manufacturers of Tube-Turn welding fittings and flanges. He will retain his duties as sales manager of the company.

National Screw & Mfg. Co., Cleveland, Ohio, announces the appointment of U. Stanley Ackles as manufacturer's representative for the states of Washington and Oregon and the Province of British Columbia. His headquarters are in the Fourth & Cherry Building, Seattle, Wash. Mr. Ackles was formerly with the Fisher Body Co., Detroit.

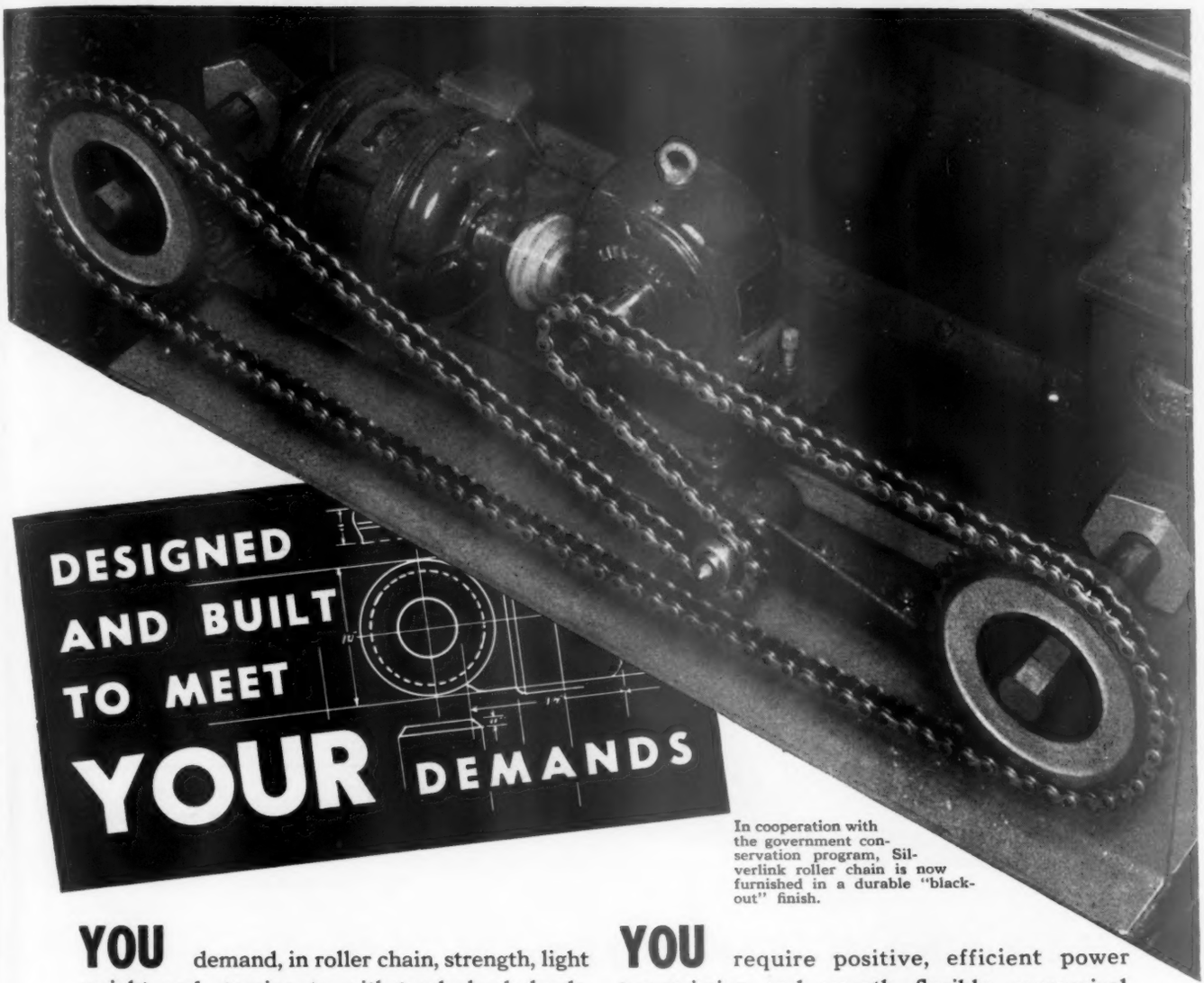
Phelps Dodge Copper Products Corp., New York, announces that it will equip and operate for the Defense Plant Corp., a large extrusion plant for the production of aluminum and magnesium tubes, shapes and rods.

S. R. Kallenbaugh has been appointed West Coast district manager of the Steel

& Tube division, Timken Roller Bearing Co., Canton, Ohio, whose western offices are at 1526 South Olive St., Los Angeles, Calif.

Wm. D. Bolt has been named Southeastern Division Sales Engineer for Templeton, Kenly & Co., Chicago, with headquarters at 1252 Cumberland Road, N. E.,

(*Continued on page* 206)



In cooperation with the government conservation program, Silverlink roller chain is now furnished in a durable "blackout" finish.

YOU demand, in roller chain, strength, light weight and stamina to withstand shock loads. LINK-BELT'S strict standards of material and production methods coupled with exclusive design features, assure exceptional strength-to-weight ratio, and uniformly high efficiency. The exclusive curled roller cushions any shock and greatly lengthens the life of the chain.

YOU require low first cost and low upkeep. Skilled engineering applied to the design and manufacture of Silverlink Roller Chain assures economy in both installation and operation.

YOU require positive, efficient power transmission and smooth, flexible, economical operation of conveying equipment . . . LINK-BELT Silverlink ROLLER CHAIN, with its sound basic design, all-steel construction and precision manufacture, meets your needs completely!

YOU can profit through the broad experience of LINK-BELT chain engineers—let them help you bring your drives and conveyors to peak efficiency. Write for Roller Chain Engineering Data Book No. 1957.

LINK-BELT COMPANY

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1,
San Francisco 24, Toronto 8. Offices, warehouses and distributors in principal cities. 9225

LINK-BELT
THE SYMBOL OF QUALITY · LINK-BELT COMPANY ·
Silverlink Roller Chain

Choose Your Weapons

in the War against Waste

Which of these METCO Metallizing Guns meets your price and priority needs?

Send for Free Copies

METCO NEWS, the only periodical on metallizing, tells how sprayed metal restores worn mechanical equipment to service . . . salvages mis-machined and other defective parts from the scrap heap . . . protects corrosive metals against chemical attack . . . helps solve hundreds of wartime maintenance and production problems. Request on your letterhead puts you permanently on the mailing list.

TWO TYPES of METCO Metallizing Guns—each the leader in its class—enable you to start *now* to conserve materials and manpower as you have never done before. For maximum power and economy at all spraying speeds, and for production coatings especially, select the Type 2E with Power Control Governor. It is the standard of metallizing efficiency in thousands of plants throughout the world. When extremely light weight and lowest initial cost are desired, choose the Type E. You can convert it into a Type 2E later, if you wish, simply by adding the Power Control Governor. Write for particulars, prices, and priority data.

METALLIZING ENGINEERING COMPANY, INC.
38-18 30th Street Long Island City 1, N.Y.
In Canada: B. W. Deane & Co., Ltd., Montreal

METCO
REG. U. S. PAT. OFF.

WORLD'S FINEST METALLIZING EQUIPMENT

(*Continued from page* 204)

Atlanta, Ga. His father-in-law, the late W. C. Cornu, formerly represented Simplex in the Atlanta area.

A. L. Fulkerson succeeds Frank Arnold, retired, as manager of the Cleveland office of The Rawlplug Co., Inc., New York. Mr. Fulkerson was formerly with the Reynolds Metal Co.

Charles R. Donovan, manager of the Washington, D. C. office of Owens-Corning Fiberglass Corp., has been appointed staff executive officer of the company, retaining his duties as manager of the Washington office.

The Sterling Varnish Co., Haysville, Pa., announces the election of Charles D. Wettach and John R. McCune, Jr., both of Pittsburgh, as members of the board of directors.

Majestic Radio & Television Corp., Chicago, announce the appointment of Dudley E. Foster as vice president in charge of engineering, and Arthur W. Freese as vice president in charge of production.

1 1 1

ARMY-NAVY PRODUCTION MERIT AWARDS

Jenkins Bros., Bridgeport, Conn. Thirty-six war mothers participated in ceremonies attending raising Army-Navy "E" flag to which a second star had been

War mothers who are war workers in the Jenkins plant, each having one or more sons in Service, raise the Army-Navy "E" with two stars. Vice President Bernard J. Lee stands at right.

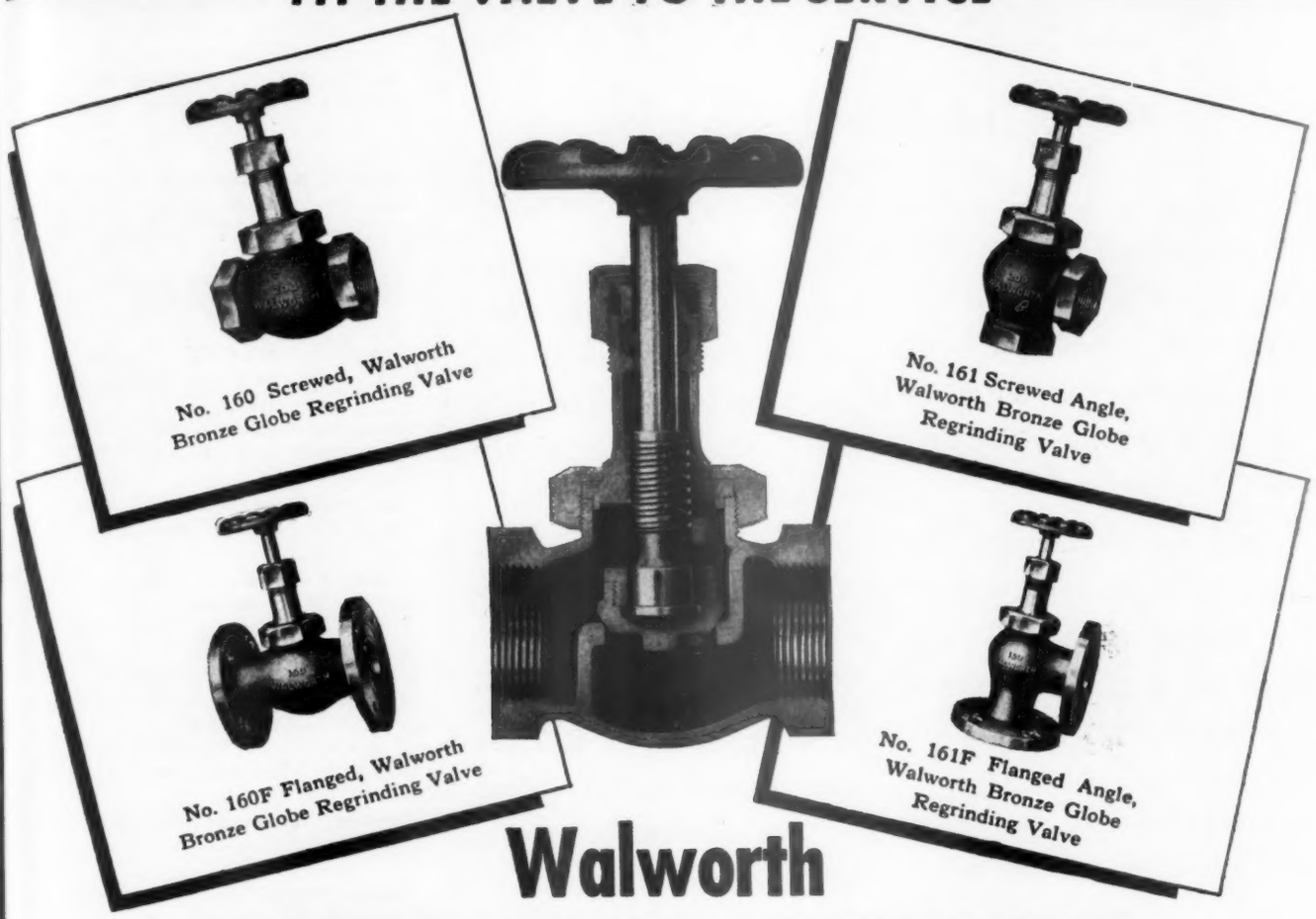
added. The original "E" Flag award was made in August 1942, and the first star was added last March. The valve factory also flies the Maritime "M".

Macwhyte Wire Rope Co., Kenosha, Wis., is now flying the Army-Navy "E" flag with the addition of one white star in the red field.

B. F. Goodrich Company plants in Niagara Falls, N. Y., and Louisville, Ky., have received notification of star awards for Army-Navy "E" citations conferred early this year. These units are the first of

(*Continued on page* 208)

FIT THE VALVE TO THE SERVICE


No. 160 Screwed, Walworth Bronze Globe Regrinding Valve
No. 161 Screwed Angle, Walworth Bronze Globe Regrinding Valve
No. 160F Flanged, Walworth Bronze Globe Regrinding Valve
No. 161F Flanged Angle, Walworth Bronze Globe Regrinding Valve

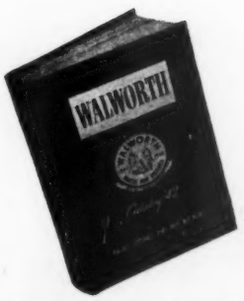
Walworth
BRONZE REGRINDING VALVES

• • •

choose the type that fits your service

When you need a Bronze Valve select from Walworth's *complete line* the one that precisely fits your service. Take this line of regrinding valves, for example. These valves are made both in Globe and Angle types with either screwed or flanged ends. Union Bonnets give added strength. All valves have bronze discs and full-way seats. Moreover, well proportioned stuffing boxes and glands assure leak-proof operation. These valves can be repacked under pressure when fully opened, and should the seats and discs become worn, they can be reground.

Each Walworth Valve has distinctive features of design and construction. You can save time, material, and much troublesome maintenance when you "fit the valve to the service."



To help you "fit the valve to the service," you'll find pertinent information on Walworth's complete line of valves, fittings, pipe, and pipe wrenches in the New Walworth Catalog 42. Included are 78 pages of practical engineering data that simplify valve selection and make piping layouts easier. Write, on business stationery, for your free copy. Address: Walworth Company, 60 E. 42nd St., New York 17, N. Y., Department O11

BOSTON WORKS
KEWANEE WORKS

WALWORTH
valves AND fittings

WALWORTH ★ VALVES AND FITTINGS ★ ESTABLISHED 1842

Amsco Manganese Steel Chain *Gave Nine Times the Life* of Mild Steel Chain

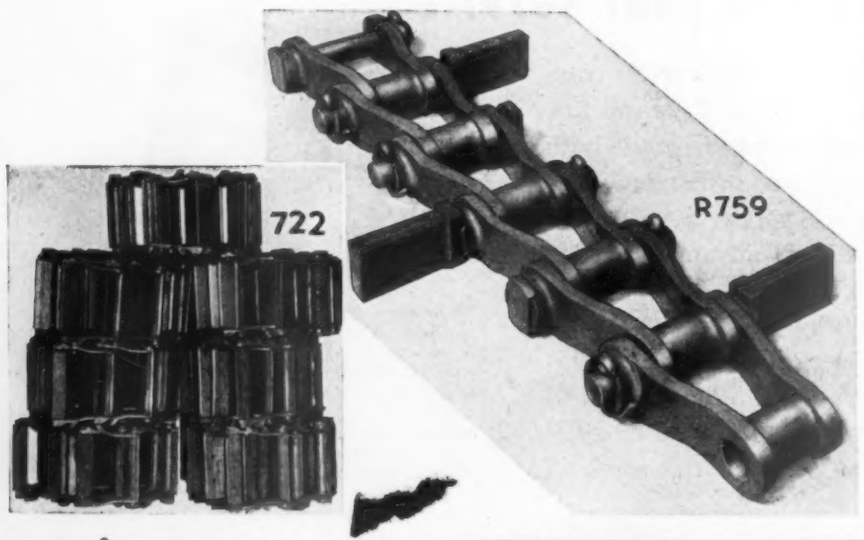
Among a number of worthwhile applications for "the toughest steel known" in steam power plant equipment is the ash-conveyor drag chain shown in picture 722. The Chief Engineer wrote:

"Our conveyor handles the ashes from six 800 h.p. boilers, moving them 200 feet. The bottom of the conveyor trough is made of hardened concrete in which is embedded a grating six bars wide made up of cast manganese steel bars.

"The first drag chain used was made of mild steel and had to be replaced after nine months.

"The Amsco manganese steel chain (408' of H-drag type) was replaced after seven years' service, six hours a day. During this period the maintenance was very low; and the manganese steel grate bars showed equally good performance."

Another type of clinker drag chain appears in R-759. Other successful power plant uses for manganese steel, such as crusher and pulverizer parts, gears and sprockets, are described in Bulletin 543-G. Send for your copy.



Amsco
AMERICAN MANGANESE STEEL DIVISION
Chicago Heights, Illinois
AMERICAN Brake Shoe COMPANY
FOUNDRIES AT CHICAGO HEIGHTS, ILL.; NEW CASTLE, DEL.; DENVER, COLO.; OAKLAND, CALIF.; LOS ANGELES, CALIF.; ST. LOUIS, MO.
OFFICES IN PRINCIPAL CITIES

(*Continued from page* 206)

seven B. F. Goodrich plants to add renewal stars to their "E" award flags.

The Mishawaka plant of the United States Rubber Co., has been awarded a white star to be added to its Army-Navy "E" flag.

Fansteel Metallurgical Corp., and Tantalum Defense Corp., North Chicago, Ill., twin Army-Navy "E" production awards.

Phelps Dodge Copper Products Corp., Los Angeles mills, Army-Navy "E".

The Carborundum Co., Niagara Falls, N. Y., Army-Navy "E" award.

General Machinery Co., Spokane, Wash., Army-Navy "E" award.

Eitel-McCullough, Inc., Salt Lake City, Utah, Army-Navy "E" award.

Handy & Harman, New York, Army-Navy second star award.

Summerill Tubing Co., Bridgeport, Pa., Star for Army-Navy "E" flag. "The people we wish to credit and the ones who are most deserving of this, are the men and women in the Summerill mill", declares J. P. Dods, director of research.

Formica Insulation Co., Cincinnati, Ohio. Star for Army-Navy "E" flag.

Charles Lennig & Co., Philadelphia, Pa., Army-Navy "E". This is the third of the group of three Rohm & Haas associated companies to receive the "E" award.

Link-Belt Co., Pershing Road plant, Chicago, Army-Navy "E". Two other Link-Belt plants have received the "E" award.

Edward Valve & Mfg. Co., Inc., East Chicago, Ind. Additional gold star added to the Maritime "M" pennant.

Chicago Wheel & Mfg. Co., Chicago, Ill. Army-Navy "E" pennant presented by Col. C. J. Otjen, Commanding Officer, 3rd District, 6th Service Command.

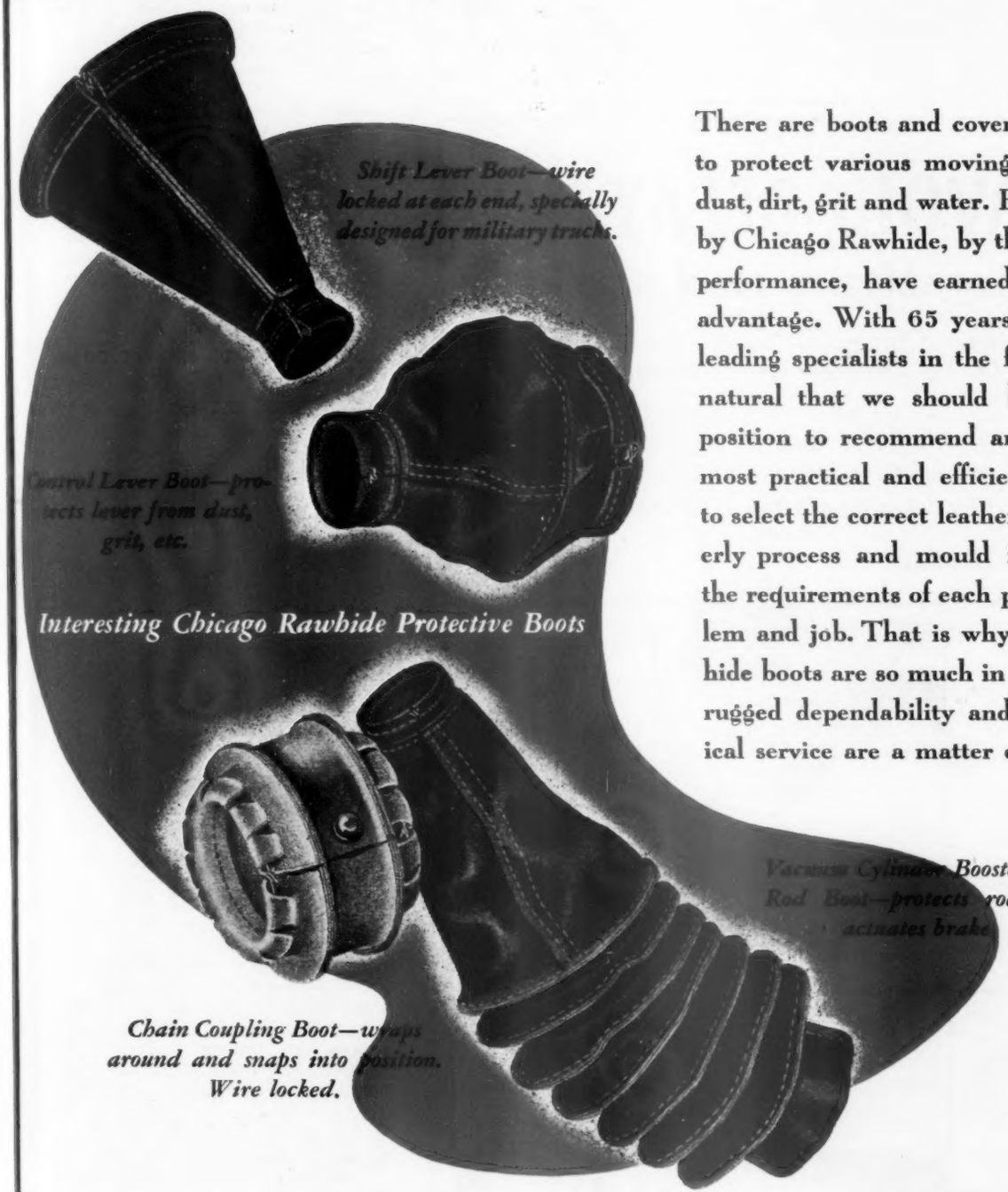
Army-Navy "E" Award Ceremonies at plant of Chicago Wheel & Mfg. Co.

NEW SOUND-MOTION PICTURE "RIGHT ON THE NOSE"

Sound motion picture film titled "Right on the Nose", which shows in detail the quickest, easiest methods of adjusting

(*Continued on page* 210)

Performance Counts


Shift Lever Boot—wire locked at each end, specially designed for military trucks.
Control Lever Boot—protects lever from dust, grit, etc.
Booster Brake Rod Boot—protects rod which actuates brake
Chain Coupling Boot—wraps around and snaps into position. Wire locked.

Interesting Chicago Rawhide Protective Boots

There are boots and covers of all kinds, to protect various moving parts against dust, dirt, grit and water. But those made by Chicago Rawhide, by their record and performance, have earned a recognized advantage. With 65 years' experience as leading specialists in the field, it is only natural that we should be in a better position to recommend and provide the most practical and efficient designs . . . to select the correct leather . . . and properly process and mould it to *best* meet the requirements of each particular problem and job. That is why Chicago Rawhide boots are so much in demand. Their rugged dependability and long economical service are a matter of record.

Manufacturers of Leather and Synthetic Rubber Products for Mechanical Application

CHICAGO RAWHIDE MANUFACTURING CO.

Established 1878

1301 ELSTON AVENUE, CHICAGO, ILLINOIS

DETROIT • NEW YORK • PHILADELPHIA • LOS ANGELES • PITTSBURGH • BOSTON • PEORIA • SYRACUSE • CLEVELAND • CINCINNATI

(*Continued from page* 208)

non-prescription industrial safety goggles so that workers can wear them in comfort, is announced by the American Optical Co., Southbridge, Mass. This is a 16 mm. film which runs for 14 minutes. No charge is made for the loan of the film. The story told by the film is also available in booklet form—the booklet having the same title.

ANNUAL PRODUCTION 120,000 TONS OF SYNTHETIC RUBBER

The world's largest synthetic rubber plant, with capacity for producing 120,000 tons of man-made rubber annually, was recently put into operation at Port Neches, Texas. The plant is capable of turning out a fifth of the nation's normal rubber requirements.

TOOL CONSERVATION AND TOOL CRIB MANAGEMENT

Bearing the title "Tool Conservation Begins in the Tool Crib", twenty page booklet available from the Greenfield Tap & Die Corporation, Greenfield, Mass., is not only a fine example of the graphic arts, but a highly practical educational textbook on tool conservation. Its large illustrated pages cover such subjects as "Planning the Tool Crib", "Identification of Tools in the Bins", "Your Tool Crib Accounting System", "Making the Most of your Space", "The Tool Crib Window", and "Types of Bins", along with the reproduction of a series of full page Greenfield advertisements, each of which covers some phase of the theme "Tool Conservation Begins in the Tool Crib".

AN UNUSUAL ADVERTISEMENT

Joe Wessiack is an employee of the Continental Screw Company, New Bedford, Mass. He has been employed by the company for thirty-six years, through two wars, epidemics, catastrophes, panic, depression, hurricane and terrific New England storms. During that period he has never been late or absent from work. You will see a picture of Joe in the Continental Screw Company's advertisement in this issue of PURCHASING Magazine, which is entirely devoted to a story about Joe and his unfailing spirit of loyalty, responsibility and punctuality. The advertisement emphasizes that "There could be no greater challenge to absenteeism than Joe's remarkable record." It's a good pin-up page for bulletin board, office or factory wall.

WAKEFIELD TO HANDLE CHASE FIXTURES FOR DURATION

THE F. W. Wakefield Brass Co., Vermilion, Ohio, announces that it has arranged to manufacture for the duration of the war the Chase line of plastic lighting units. Augmenting the Wakefield "Commodore" units, the former Chase

products are offered in two styles—the Commander (formerly the Midas line) and the Alden. Little, if any, difference in lighting efficiency exists between the units. Individual styling is different and user is afforded a wider choice in the design of semi-indirect plastic reflectors. The Commander line is offered in wattages from 200 to 750 watts and is available in either close connected ceiling or semi-rigid suspension type. Chase catalog numbers have been retained.

DOMESTIC INDUSTRIES, INC. ACQUIRES SERVICE CASTER & TRUCK CO.

Service Caster & Truck Company of Albion, Mich., manufacturers of material handling equipment and casters, has been acquired by Domestic Industries, Inc., Chicago, Ill. The Service subsidiary Service Truck & Caster Co. of New England, Somerville, Mass., was included

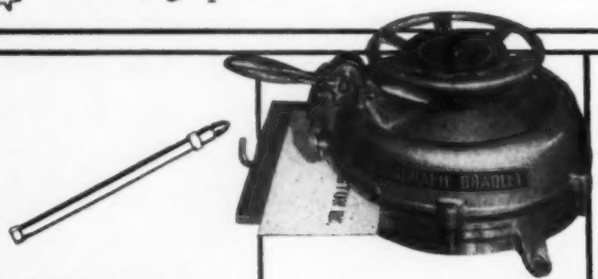
(*Continued on page* 212)

AVOID DELAY

in getting shipping room supplies!

Your Nearest Diagraph-Bradley Distributor Carries Complete Line In Stock

TODAY it is not always possible to anticipate your shipping room needs. But, if you depend upon the Diagraph-Bradley Distributor near you, it is unnecessary to order far in advance. He carries a complete line in stock and delivers *right now* to firms with high priorities.



D-B Fountain Marker . . . saves chalk and crayon . . . assures permanent marking . . . speeds addressing.

Diagraph-Bradley Stencil Cutting Machines made in six letter sizes, from ½" to 1¾". (Priority necessary.)

D-B Stencil Ink . . . non-settling, non-clogging, more markings per gallon.

D-B Button-type Fountain Brush saves ink and time.

For your nearest Diagraph-Bradley distributor, see phone book or write or wire Diagraph-Bradley Stencil Machine Corp., 3750 Forest Park Blvd., St. Louis, Mo.

STENCIL-BOARD

D-B Stencil Board . . . cut to size.

DIAGRAPH-BRADLEY
STENCIL MACHINES
Made By World's Oldest and Largest Manufacturer of Stencil Cutting Equipment

You can't chart progress in the molded plastics business with a calendar—it takes a stop watch. It takes one fellow to say, "Here she comes!" and another to say, "There she goes!"

The speed of change in the production of molded plastics is breathless. Methods and practices are improved so fast that the Imagination and Initiative of today are simply old stuff tomorrow. And MATERIALS?—they keep coming along, new and better, seemingly without end.

All this whirlwind progress poses some problems for the user of molded plastics. His best answer is to seek out a molder who is actually a part of the field's advances.

That is a role we are striving to fill, challenging as it is. So far, the records indicate that we have been more than ordinarily "adequate". Customers tell us that we "always come through". And certainly we are among the most active buyers of new and improved equipment in the field—when equipment can be bought.

After all, the thing we have to offer you, as a user of molded plastics, is a fast-paced "Know-How" which operates through a fine organization, properly equipped and up to the minute.

As war demands taper off we'll have capacity for peacetime products, and we're eager to start talking about them now. If you, too, are thinking along those lines, let us work with you.

THE GENERAL INDUSTRIES COMPANY

MOLDED PLASTICS

Molded Plastics Division • Elyria, Ohio

Chicago: Phone Central 8431
Detroit: Phone Madison 2146
Milwaukee: Phone Daly 4057
Philadelphia: Phone Camden 2215

WEST

DURMA-GARD

PROTECTIVE GARMENTS

These Arm Guards and Aprons are made of a light, strong base fabric which has been treated with a specially processed plastic.

- Resistant to oils, acids and chemicals.
- Spark resistant. Withstand solvents.
- Resist absorption. Lightweight, flexible and washable.
- Adjustable arm guard sleeve is designed to permit ventilation.

Also available in Overalls and Coveralls.

LET US PROVE THESE CLAIMS—USE THIS COUPON

West Disinfecting Co.
42-16 West St., Long Island City 1, N. Y. Dept. P
Please send us your FREE literature on Durma-Gard Arm Guards—Aprons—Overalls—Coveralls.

Name..... Title.....

Company.....

Address.....

(*Continued from page* 210)

in the acquisition. The business of both Service companies will be carried on as the Service Caster & Truck Division of Domestic Industries, Inc. Management and operating personnel will remain unchanged.

WESTINGHOUSE ANNOUNCES NEW BUYING DATA

New simplified buying data in bound and loose-leaf form for quicker selection, easier ordering and quicker delivery, is announced by Westinghouse Electric and Manufacturing Company. Buyers of Motor and Control may secure copies from the Company's district offices only — no mailings from the Westinghouse Headquarters at East Pittsburgh.

Bound books contain prices, dimensions, application data and descriptions. The 180-page "Motor Buying Data" covers popular types and ratings of motors (up to 100 hp), gearmotors, and M-G sets. "Control Buying Data" (276 pages) lists a wide variety of controls and accessories for d-c, single-phase, squirrel cage and wound rotor motors.

For the use of large-scale purchasers, the motor and control loose-leaf book contains complete products listings, plus information on special features required for specific industries. Pricing data is always kept up to date by the issuance of new price supplements.

Arranged to fit buyers' needs and eliminate selection errors, the new books include only pertinent buying data. Special features are the new index system for quick product selection, and the directory of standard equipment designed to eliminate need for specially built motors and control.

METALLIZING COMPANY BUYS NEW YORK BUILDING

The Metallizing Company of America, Chicago, Ill., announces the purchase of a new building located at 135 Cedar St., New York City, as eastern headquarters for its sales and service operations in that area. The building is a complete operating unit with development and test laboratories, warehouse, and demonstration shop. V. A. Cook continues in charge of eastern operations. The company has in addition, 22 engineering sales offices throughout the United States, Canada and Hawaii.

ARC WELDING STUDIES NOW IN BOOK FORM

"Studies in Arc Welding — Design, Manufacture and Construction", is the title of a book just published by the James F. Lincoln Arc Welding Foundation, Cleveland, Ohio, which embraces 98 outstanding papers on arc welding. The papers were submitted by trained technicians and engineers in the Foundation's 1940-42 Industrial Progress Award Program, representing the work of 113 engineers, designers, works managers, superintendents and others, each of whom

(*Continued on page* 214)

SCOVILL COLD-FORGING "KNOW HOW" DELIVERS FASTENINGS THAT DELIVER THE GOODS

Scovill's cold-forged fastening devices are found throughout industry, securely holding together vitally important assembled products for war and peace alike. The part illustrated is one of our war jobs—the hammer spring plunger for the calibre .30 M1 carbine. Thanks to Scovill skill and "know how"—cold-forging did the trick—thus saving materials—money—motions, on this essential war job calling for the strictest observance of exacting requirements.

This same ingenuity assures uniform quality in Scovill standard fastenings, even in huge quantities. Take your needs to the Scovill Fastenings Expert in the nearest office listed below. He will show you jobs we have licked that tested and proved our "know how". You will appreciate that our volume of war work restricts acceptance of new work. You will receive a prompt, frank answer as to our current ability to serve you.

Please: *If fastenings are not your problem, kindly pass this on to others to whom our "know how" might be of help. Thank you!*

SCOVILL MANUFACTURING COMPANY
WATERVILLE SCREW PRODUCTS DIVISION
WATERVILLE 48, CONN. TEL. WATERBURY 3-3151

NEW YORK, Chrysler Building • DETROIT, 6432 Cass Avenue • CHICAGO, 1229 W. Washington Boulevard • PHILADELPHIA, 18 W. Chelten Avenue Building
PITTSBURGH, 2882 W. Liberty Ave. • SYRACUSE, Syracuse-Kemper Insurance Bldg. • LOS ANGELES, 2627 S. Soto St. • SAN FRANCISCO, 434 Brannan St.

Simplicity of Design Means Easier Maintenance

Valves Respond to Good Treatment— Take Care of Those You Have

Nowadays when the valves you have must do double duty it is just good business to do a little extra checking of this vital equipment. Even the best valves need looking after, and prompt servicing when necessary will save more costly repairs and replacements later.

Lukenheimer Valves are easy to keep in good operating condition. Simplicity of design, with few working parts, makes them readily accessible for inspection and maintenance follow up.

Again we say, take care of the valves you have. They'll respond to good treatment and repay you in better service, less time out for repairs, and a minimum expenditure for maintenance.

A Lunkenheimer distributor is near you to help you get what you need. His complete facilities are at your service.

ESTABLISHED 1862
THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI 14, OHIO, U. S. A.
NEW YORK CHICAGO
BOSTON PHILADELPHIA
EXPORT DEPT. 318-322 HUDSON ST., NEW YORK 13, N. Y.

It fits perfectly—
One body takes either the rising stem or non-rising stem trim assembly. A timely feature when it's necessary to convert from one type to the other. Simply loosen the trim assembly and lift out. The body remains in the line.

Bronze Double Disc Gate Rising Stem

Bronze Wedge Disc Gate Non-rising Stem

LUNKENHEIMER VALVES

(*Continued from page 212*)
applied himself individually to a specific design study involving arc welding.

The volume, 6 x 9 inches, contains 1295 pages, fully indexed, with 1000 illustrations. It is bound in semi-flexible simulated leather, gold embossed. The price is $1.50 per copy postpaid anywhere in the United States; $2.00 elsewhere. Copies are available from The James F. Lincoln Arc Welding Foundation, P. O. Box 5728, Cleveland, Ohio.

ALVEY-FERGUSON CO. FORMS CALIFORNIA DIVISION

The Alvey-Ferguson Company of California has been formed, with sales office, engineering and manufacturing facilities at Slauson and Santa Fe Avenues, Los Angeles, Calif., for the purpose of manufacturing and selling conveying equipment and metal products cleaning and finishing equipment similar to the products now manufactured by The Alvey-Ferguson Co., of Cincinnati, Ohio. John C. Walter, head of the Cincinnati Company is president of the new company. In addition to having its own sales staff, the new company will also be represented on the West Coast by Peter D. Bowley & Associates, with sales offices in Los Angeles, San Francisco, Seattle, and Portland.

CLIMAX ENGINEERING INTERESTS BUY McALEAR MFG. CO.

Ownership of the McAlear Manufacturing Co., Chicago, makers of valves, regulating and control equipment, has been acquired by the interests controlling the Climax Engineering Company, Clinton, Iowa. Edward F. Deacon, president of the Climax company will be president and general manager of the McAlear company. Mrs. P. G. McAlear, formerly president and now chairman of the board of the McAlear company will continue to be identified with the management.

CHART FOR CALCULATING MACHINING OPERATIONS

Ingenious chart that simplifies the calculations for machining operations, designed by C. L. Bendle, vice president in charge of sales engineering, Crobalt, Inc., Ann Arbor, Mich., helps to solve problems for turning, drilling, boring, reaming, facing and milling operations. The charts are assembled into a pad so that after a problem has been solved the page may be torn out and filed with the blue prints or specifications for the job. The chart is known as the Production Calculator. Free copies are available for the asking.

SCREEN COMPANY

The Patterson Screen Company of Towanda, Pa., manufacturers of X-Ray and fluoroscopic screens, has combined with E. I. du Pont de Nemours & Co.,

(*Continued on page 216*)

THEY'RE FITTING STEELS TO MEET THE GRIM NECESSITIES OF WAR

IT is to help *you* speed the war effort that the lights are burning late in our steel production and research laboratories. More than 1200 metallurgists and trained technicians are working here. Their most important job today is to adapt steels to the rigorous demands of war economy and war-time manufacture. They are on our payroll but they are working for you.

Largely from their knowledge and experience were born the National Emergency Steels that have made it possible to meet the critical conditions imposed by the shortages of nickel, chromium, molybdenum, vanadium and other strategic alloys. They have written new recipes for lean-alloy steels that provide the required qualities without excessive use of alloying elements. They've proved that you can substitute one alloy for another to achieve satisfactory results. They've made thousands of experiments that show not merely what these steels will do, but how you, who must use these steels, can fabricate and heat treat them to give the best results in service.

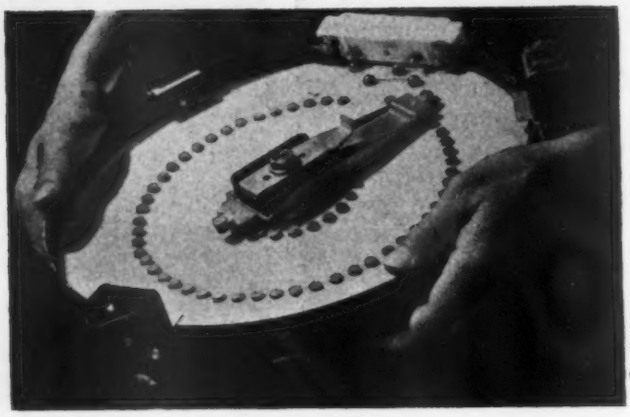
The mass of new technical knowledge these men have turned up is vitally important to you. We gladly place it at your disposal. Properly used it can be of real help in applying the steels now available, with greatest efficiency and least waste of time and labor. Only by taking advantage of America's war-stimulated research can this nation's overwhelming superiority in productive capacity be fully utilized.

CARNEGIE-ILLINOIS STEEL CORPORATION

Pittsburgh and Chicago

Columbia Steel Company, San Francisco, *Pacific Coast Distributors* — United States Steel Export Company, New York

UNITED STATES STEEL



IT'S SUBSTANTIAL

Ward Leonard Pressed Steel Rheostats, properly installed and used, will outlast the machines they control. They are absolutely smooth in operation. They dissipate heat from both sides. Contacts are solid metal ground for perfect fit. These are but a few of their many advantages. Bulletin 60 gives full particulars. Send for a copy.

Pressed Steel Rheostats are made in 4" to 18", Ring types from 1½" to 4" inclusive.

ARMY E NAVY ARMY E NAVY

WARD LEONARD

RELAYS • RESISTORS • RHEOSTATS

Electric control (WL) *devices since 1892.*

WARD LEONARD ELECTRIC CO., 50 South St., Mount Vernon, N. Y.

A good point to remember in buying cap screws is PRECISION Quality. There is no substitute for a good Precision-made Cap Screw no matter what your application may be. Your assemblers like free-running threads that take hold quickly. Drop us a note anytime.

TRIPLEX SCREW COMPANY 5331 Grant Avenue Cleveland, Ohio

TRIPLEX THREADED FASTENERS

CAP AND SET SCREWS • BOLTS, NUTS AND RIVETS

(*Continued from page* 214)

and will be known as the Patterson Screen Division of the Du Pont Photo Products Department. Carl V. S. Patterson, founder and president of the Towanda Company will be manager of the new division.

RESUME PLATE GLASS POLISHING

Grinding and polishing of plate glass has been resumed at the Creighton works of the Pittsburgh Plate Glass Company, according to an announcement of the manufacturing division. Resumption of plate glass manufacture at this factory will give employment to about 300 additional workers.

This operation was discontinued last December as a result of severe building restrictions and the ban on the manufacture of pleasure cars, two important industries normally requiring large amounts of plate glass.

Surplus stock and shipments from the Company's Ford City plants have enabled the Duplate section of this factory to continue laminating various kinds of safety glass for the military services, but the greatly increased demand of the armed forces for airplane glass has necessitated greater plate glass production.

EQUIPMENT FOR HELIUM—SHIELDED ARC WELDING

The development of both manual and automatic arc-welding equipment specifically designed for the welding of magnesium, magnesium alloys, aluminum and other high-strength light alloys under a protective shield of helium gas, has been announced by C.I. MacGuffie, Manager of General Electric's Electric Welding Division.

According to Mr. MacGuffie, the availability of such equipment should make possible the greatly extended use in war

Butt-joint ⅛-inch magnesium plate automatically welded at rate of 24 inches per minute with G-E helium-shielded arc welding equipment.

production of the lighter metals whose welding demands precise control of concentrated heat and protection of the molten metal from the oxidizing effect of oxygen in the air.

A hint of things to come in the arc welding of magnesium and other hard-to-weld metals is given by an automatic unit now in use at the G-E welding laboratory. Completely automatic after preliminary adjustment, this equipment makes a smooth, clean weld under a shield of helium gas at rates up to 40 inches per minute on 1/8-inch stock, for example.

(*Continued on page* 218)

New Economy in Protected Payroll Checks

... presented by Standard ... protected by American Mutual Liability Insurance Company

GREATER EFFICIENCY AND ACCURACY FOR YOU

Standard's Protected Payroll System provides the safety, efficiency, and accuracy of checks; eliminates handling of cash; provides better payroll records. Protected against loss through forgery, alteration or counterfeiting, by American Mutual Liability Insurance Company, Boston, Mass.

PLUS CONVENIENCE AND PROTECTION FOR YOUR EMPLOYEES

S.P.P. Checks improve employee relations and help reduce absenteeism by providing the safety of an insured check, plus the convenience of cash ... thanks to the Standard method of establishing "cashing points" at stores, banks, etc., chosen by your employees. *Protection permits wife to cash as second endorser.*

PLUS PROTECTION FOR ALL CASHING POINTS

The (S) emblem on your checks is a symbol of safety which banks, merchants, and other cashing points respect, because they receive the same insurance protection (primary coverage) as you receive. Quick acceptance means easy cashing—builds goodwill for your company, your employees.

A SAFE, SIMPLE, and SPEEDY SOLUTION TO MANY WARTIME PAYROLL PROBLEMS

TODAY, with payroll operations magnified to huge proportions, *you* may need the special convenience, speed and accuracy offered by Standard's *Protected Payroll* Checks. *Broad protection* against loss, and the resulting ease of cashing, assure their acceptance by employees "the same as cash." The unusual *simplicity* of this Protected Payroll Check System eliminates time loss in paying (no countersigning of check or receipting for cash)—while Standard's continuous Kant-Slip forms materially speed up writing your checks on your present business machines. Printed on safety or plain paper, S.P.P. Checks offer maximum *economy* in installation, as well as in operation.

Review *all* their special advantages. Mail coupon for booklet today.

THE STANDARD REGISTER COMPANY • DAYTON 1, OHIO

On the Pacific Coast, address Sunset McKee-Standard Register Sales Company, Oakland 6, California

Standard Systems

OF INDUSTRIAL CONTROL

Standard is the ORIGINATOR, in continuous business forms, of these distinctive marginally punched holes which are Marks of Identity of the continuous forms of The Standard Register Company—"The Forms with the Punch."

THE STANDARD REGISTER COMPANY
1003 Albany Street, Dayton 1, Ohio

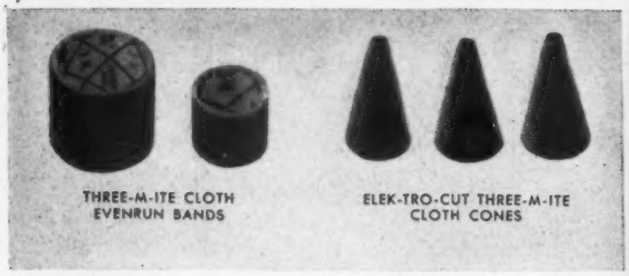
Please send me your booklet fully describing all features and benefits of Standard Protected Payroll Checks.

NAME_____

FIRM_____

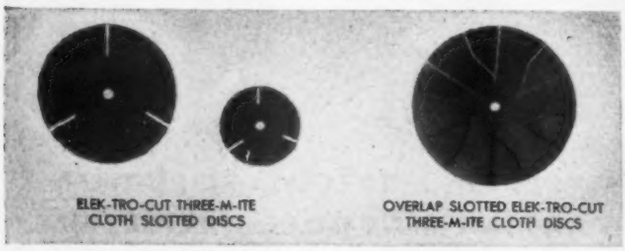
ADDRESS_____

3-M ABRASIVE SPECIALTY ITEMS

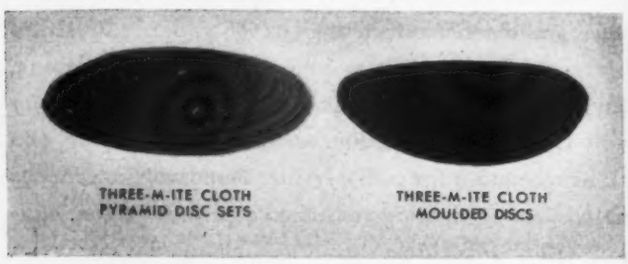


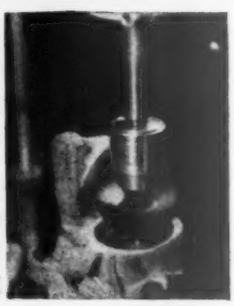
★ TAILORED TO REACH HARD-TO-GET-AT AREAS

★ SCIENTIFICALLY DESIGNED FOR LONGER LIFE



★ FAST CUTTING, ABSOLUTELY UNIFORM ABRASIVES





★ A SIZE, STYLE AND GRIT FOR EVERY SURFACE

★ SEND FOR OUR BOOKLET ON 3-M ABRASIVE ITEMS!

MINNESOTA MINING & MANUFACTURING CO.
SAINT PAUL 6, MINNESOTA

P 1043

☐ Please send us a copy of your 3-M ABRASIVE SPECIALTY ITEM BOOKLET.
☐ Have a 3-M ABRASIVE ENGINEER call to discuss our finishing methods.

Name.....
Department.....
Firm.....
Address.....
City..... Zone..... State.....

(*Continued from page* 216)

This machine incorporates a new electronic motor control which enables the equipment to hold the proper arc-length even while the arc climbs and descends inclines, such as encountered, for example, in welding curver-surface parts.

The heart of the manual helium-shielded arc-welding equipment is a specially designed electrode holder which is arranged to hold either a tungsten or a carbon electrode, to conduct the welding current to the electrode and to surround the electrode with a stream of helium gas. The source of direct-current power for both manual and automatic welding is a standard G-E d-c arc-welding machine.

Supplies of helium have been made available by the Bureau of Mines for welding, especially for use in war production. A number of distributors of compressed gases in different parts of the country are now obtaining helium gas from the Bureau of Mines for resale.

MONSANTO TO INCREASE PHENOLIC RESINS PRODUCTION

Construction of additional manufacturing facilities for Resinox phenolic resins and molding compounds at Monsanto Chemical Company's plastic plant at Springfield, Mass., has been approved by the War Production Board, according to Vice President John C. Brooks. The increased capacity will be devoted to high-priority war applications.

PRECISION MEASUREMENT HAND BOOK

To help train inspectors and machinists in the use of gage blocks and vernier instruments, the Jansson Gage Company of Detroit has issued a "Handbook of Precision Measurement." A complimentary copy of the 64-page, generously illustrated volume is available to executives requesting it on their letterheads.

The instruction section of the handbook is in five chapters devoted to the history of measurement, precision measurement, making gage blocks combinations, gage block inspection, angle measurement with the sine bar, and the use and reading of vernier calipers and height gages. Photographs of actual operations supplement the text, which is in simple, non-technical language.

Following the instruction section is a catalog of gage blocks, vernier height gages, and vernier calipers. Requests for copies of the handbook should be addressed to the Jansson Gage Company, 19208 Glendale Avenue, Detroit, Michigan.

GENERAL ELECTRIC RELEASES NEW MOVIE DESIGNED TO SPUR PRODUCTION

A new sound movie, "2311", designed to spur the men and women in war plants to greater production in order to end the war as quickly as possible, has been released by General Electric. "2311" is being shown at local theatres in all cities where G-E plants are located, and it is

(*Continued on page* 220)

WIREMOLD

WIRING FOR LIGHT . . . FOR WORK

AID *to war production . . .*

Better lighting begins with better wiring. Motion economy and working efficiency begin with provision of electric power outlets at point of use. WIREMOLD Industrial System-Wiring methods and materials have provided these two production necessities for busy war plants throughout the country and in addition have helped solve many special wiring problems contributing to maintenance of war production quotas.

AID *to future planning . . .*

Wiremold Engineers . . . and Wiremold Contractors and users . . . are accumulating a wealth of ideas in application that will help industry save time and money in re-converting to civilian production. For example, basic Wiremold installations made now, or written into specifications for post-war projects provide the flexibility essential to take full advantage of future far-reaching developments in lighting, and in the greatly expanded future use of electrical conveniences in every department of industry, office, farm and home.

PLUGMOLD

simplifies lighting modernization

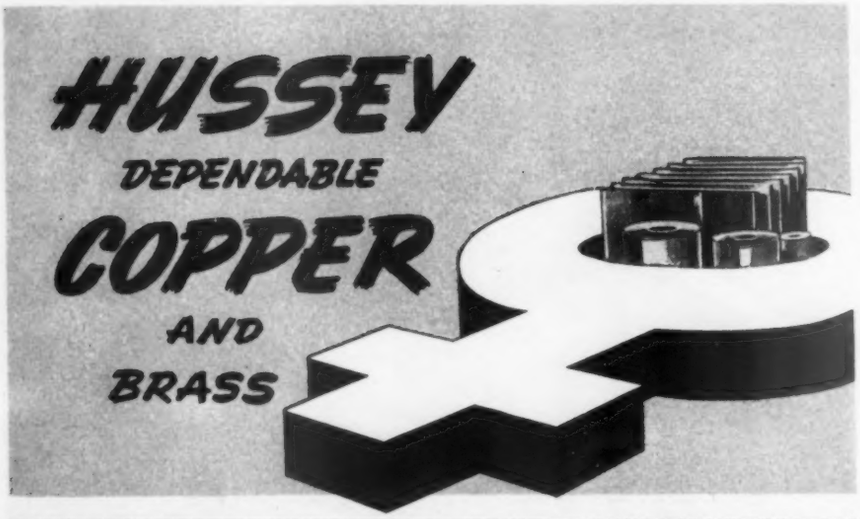
In the fluorescent lighting installation illustrated above, the advantages of #2100 PLUGMOLD for use in connection with lighting modernization are readily apparent. Note that, by the use of rigid coupling #2101 and a hanger clamp, sufficient rigidity is assured to span beams and also to furnish support for the lighting units. Note, too, that Wiremold Polarized Outlets #2127P permit plugging in of the individual lighting units so that they may be quickly removed for efficient maintenance. The 3-pole receptacles also permit a satisfactory ground. A particularly important feature of this installation is that the Plugmold itself provides a complete electrical distribution system, while the speed and simplicity of installation by Wiremold methods made lighting modernization of this entire factory area possible without interrupting production.

Keep abreast of what Wiremold can do for you today and its potentialities for tomorrow. Be sure your name is on our list to receive new bulletins and data sheets now available or to be issued shortly. Conforms to Federal specifications W-R-32. Listed by U.L. Immediately available on suitable priority.

The Wiremold Company
Hartford 10, Conn.

WIREMOLD CAN HELP YOU

PRODUCE FOR WAR . . . AND PLAN FOR PEACE



A Good Name to Remember in Your Post-War Thinking for These and Hundreds of Other Similar Applications

Agriculture Implements	Mechanical Power Trans. Equip.
Aircraft & Parts	Mining Equipment
Business Machines	Motorcycles, Bicycles, & Parts
Cars & Trucks, Industrial	Motor-Vehicles & Parts
Cars, Electric & Steam	Oil Burners
Clocks, Watches	Oil Field Equipment
Communication Equipment	Photographic Apparatus
Dental Equipment	Printing Machinery & Equipment
Electrical Equipment	Pumps & Equipment
Engines, Turbines	Radio & Phonograph Apparatus
Firearms	Refrigeration & Air Conditioning
Fire Extinguishers	Safes & Vaults
General Machinery	Scales & Balances
Hardware	Sewing Machines
Heating & Cooking Apparatus	Ship Building & Repairing
Instruments	Soda Fountain Equipment
Laundry Equipment	Stokers, Mechanical
Lighting Equipment	Textile Machinery & Parts
Locomotives	Tractors
Machine Tools	Woodworking Machinery

X-Ray & Therapeutic Apparatus

and hundreds of other similar applications where the corrosive action and easy workability and dependability of copper and brass are essential.

HUSSEY

C. G. HUSSEY & COMPANY
(DIVISION OF COPPER RANGE CO.)
Rolling Mills and General Offices: Pittsburgh, Pa.
Warehouses in Principal Cities

(*Continued from page 218*)

available without charge for showings by service clubs, industrial concerns, fraternal groups, and other organizations.

The name "2311" represents the number of American casualties incurred during the last 24 hours before the signing of the armistice at the close of World War I. The movie stresses the importance of a day or even an hour in producing the materials needed by our armed forces. How American workers can hasten the day of victory is told through the stories of representative G-E employees who are working harder and longer and foregoing vacations to meet the challenge of our armed forces — "Enough, and on time."

Vivid scenes of action on land, on sea, and in the air from World War I and from recent battles in which American boys have fought are accompanied by realistic sound and interesting narration. How the allies are being supported on the production front is shown in scenes of the manufacture of G-E products for war which have seen action on all fronts—turbosuperchargers, aircraft instruments, gunfire control apparatus, searchlights, propulsion and auxiliary equipment for ships — and a myriad of other essentials.

The film runs 11 minutes. It may be obtained in 16 mm or 35 mm size upon request to the Visual Instruction Section, General Electric Company, Schenectady, N. Y., or to any of the company's district offices.

* * *

HIGHER QUALITY CAMELBACK FOR RECAPPING TIRES

Informed by Rubber Director that it is now possible to provide a higher quality camelback for recapping truck and passenger car tires, the Office of Price Administration has removed rationing restrictions on the use of Grade "C" camelback in recapping service.

Grade "A" camelback, previously available for only the largest truck and bus tires, may now be obtained for recapping tires on all trucks and buses although it is still subject to rationing. The quality of camelback for passenger cars will be improved from Grade "F" reclaimed rubber to Grade "C" synthetic stock. Formerly, recapping with Grade "C" camelback was not permitted for passenger automobiles, but was restricted to commercial vehicle use.

In Amendment No. 48 to Ration Order IA, effective August 25, OPA revised its definition of "passenger-type camelback" to include Grade "C" as well as Grade "F" camelback. The definition of "truck-type camelback" is limited to Grade "A" stock.

This action permits any person to have his tires recapped with Grade "F" or Grade "C" camelback without a rationing certificate.

Higher quality rubber trend for recapping tires is possible, according to the Rubber Director, because of the use of Buna S (a synthetic rubber). He added that although inventories of the new passenger tire camelback are not adequate at

(*Continued on page 222*)

WARTIME INDUSTRY has its "task force" too . . .

Wherever war equipment is made . . whether heavy production machinery; trucks or tanks; tractors, guns, ships or locomotives; tank cars or troop trains . . screw fasteners are vitally necessary in fastening steel to steel.

Wasmer production of Tru-Fit Bolts and Screw Fasteners is dedicated 100% to making America's mechanized war equipment the strongest, the toughest, and the most durable in the world.

They are playing an important part in the "task force" of industry!

WASMER
BOLT & SCREW CORP.

13600 ATHENS AVE., CLEVELAND, OHIO, U. S. A.

(*Continued from page 220*)

present to provide for 100 per cent of the requirements, it is hoped that manufacturers can have sufficient quantities in the field within the next 30 days. Meanwhile, "C" and "F" Grade material for passenger tire usage will be optional with the consumer.

CONVENTION BY RADIO

A convention-by-radio was held by the National Association of Foremen Saturday evening September 25, over the Blue Network's 159 outlets, and other stations. Reception was at local group gatherings some of which were dinner meetings. Among the speakers were Charles E. Wilson, executive vice chairman of the War Production Board, and Paul G. Hoffman, president of the Studebaker Corp.

NEW HEAD FOR WPB SALVAGE DIVISION

The appointment of Herbert M. Faust, Philadelphia, advertising manager of the Curtis Publishing Co., as Director of the Salvage Division of the War Production Board, is announced by Donald M. Nelson, WPB Chairman. Mr. Faust succeeds Paul C. Cabot of Boston who recently resigned because of ill health. In making the announcement Mr. Nelson stated, "It would be impossible to over-emphasize the importance of collecting iron and steel scrap, tin cans, wastepaper, household fats and other items of salvage. The nation is facing a shrinking inventory of iron and steel scrap, and we may need to put on another all-out drive for this metal."

THE NAVY'S NEW UNIFORM COLOR

At the special request of the Navy Department, The Textile Color Card Association has just issued for distribution to industrial channels, the official standard for United States Navy Grey, which the Navy has recently adopted and which is to be used for Commissioned, Warrant, and Chief Petty Officers summer working uniforms and enlisted men's grey undress jumpers, grey trousers and peaked caps.

The standard specification for this new grey, as approved and accepted by the United States Navy, is portrayed on a small card in the actual fabric used by the Navy for the aforementioned specific purposes. This grey replaces the khaki color formerly worn by the Commissioned, Warrant, and Chief Petty Officers for summer working uniforms and likewise replaces the long-established white used for enlisted men.

The card showing this new Navy Standard Grey, can be procured from The Textile Color Card Association, at 200 Madison Avenue, New York.

MOBILE UNIT SUBSTATION

With war plants and military installations vitally dependent upon the continued flow of electric power, even a temporary shutdown of a distribution substation might have very serious effects. In order to prevent trouble or maintenance in permanent substations from causing long service outages, General Electric, in co-operation with the engineers of the Consolidated Gas, Electric Light and Power Company of Baltimore, has built a complete 3,000-kva mobile unit substation, which is ready on a moment's notice to be moved to any part of the system where emergency power is required.

Complete Mobile Substation

This equipment is one of the largest ever built for highway use, having a capacity sufficient to supply enough power to operate thirty thousand 100-watt lamps, or supply a small town. Weighing 20 tons, the substation is compactly mounted on a semitrailer, the front end of which is supported by the towing tractor during transportation.

This equipment can be used to transform power circuits of 33,000 or 13,200

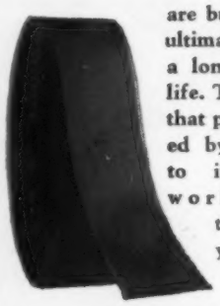
(*Continued on page 224*)

PENNIES
Save the Waste of a SHUTDOWN

The loss in just a single shutdown is many times the difference in cost between a Schieren quality product and one of ordinary commercial standards.

CHAS. A. SCHIEREN COMPANY
31 FERRY STREET, NEW YORK 7, N. Y.
60 FRONT ST. W., TORONTO, CANADA

SCHIEREN LEATHER BELTINGS



are built to deliver ultimate power over a long industrious life. The success of that policy is attested by our service to industry, the world over, through 75 years.

SCHIEREN'S MODERN DESIGN LEATHER V BELT
(Pat. Appl. for)

Any size belt can be made endless right on the job. Supplied in rolls —eliminates large inventory. The tenacious pulley grip of the leather side walls makes it unnecessary to accurately match sets.

SCHIEREN LEATHER PACKINGS

You can depend on a Schieren Packing to perform well — long!

SCHIEREN
DUXBAK BELTING
TRADE MARK

LEATHER BELTINGS • SPECIALTIES AND HYDRAULIC PACKINGS

CHICAGO - SALT LAKE CITY - LOWELL - DENVER - DALLAS
NEW YORK - PITTSBURGH - PHILADELPHIA - NEWARK

"The Boss is 20 Years Younger

since we cut our assembly time in half with AMERICAN PHILLIPS SCREWS!"

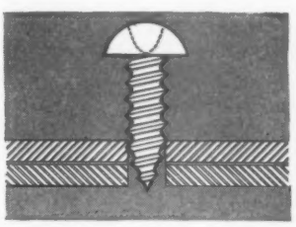
Production comes out of the doldrums with a rush, when assemblies are changed over to American Phillips Screws. For then you're free of delays from slow, uncertain driving . . . crooked screws that have to be backed out and re-driven . . . spoiled work and broken screwheads . . . and lost-time accidents from slashed hands. The modern method of American Phillips Screw Driving enables new workers to do A-1 work right from the start . . . with the 4-winged driver and recessed screw-head that align themselves to *drive automatically straight,* and set up flush-tight with the work surface . . . without physical strain or mental hazards. So production executives who change to American Phillips Screws not only pat themselves on the back . . . they get an *extra* pat on the back from all their assembly workers, too.

And what's more, they get 3 exclusive American advantages with every order: *American Value,* guaranteed by self-checking count, and individual inspection that makes sure every screw is A-1. *American Engineering,* that brings you all important improvements first, and helps with any special problems. *American Service,* that gives reasonably prompt delivery even in wartimes, because the American line is complete. You, yourself, can get rid of a lot of headaches . . . and hike production as much as 50% . . . by changing *now* to double-quick American Phillips Screws.

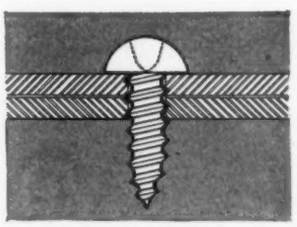
AMERICAN SCREW COMPANY
PROVIDENCE, RHODE ISLAND
Chicago: 589 E. Illinois Street *Detroit:* 5-267 General Motors Building

WORLD'S EASIEST, FASTEST, MOST ACCURATE METHOD OF PRODUCTION SCREW DRIVING

American Phillips Hardened Self-Tapping Sheet Metal Screws are made in Type A (Gimlet Point) shown, Type Z (Blunt Point), and Type C (Tapered Point).



American Phillips Driver and Screw form a single, straight-line driving unit . . . and stay that way until screw is completely driven in.



American Phillips Hardened Self-Tapping Sheet Metal Screw sets up tight and straight in drilled or clean-punched holes.

BUY LENOX HACK SAWS BAND SAWS FOR FASTER PRODUCTION

Shops from Coast to Coast are finding LENOX BLADES the answer to their problems.

LENOX Distributors are near you. See yours today.

There is no substitute for "LENOX" Quality.

AMERICAN SAW & MFG. CO., SPRINGFIELD, MASS.

"The Blade in the Plaid Box"

A HALF CENTURY PLUS — ONE

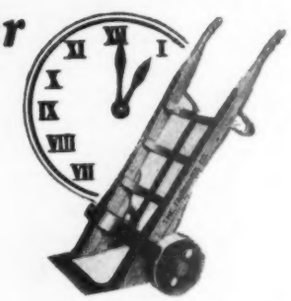
SIMONDS for GEARS

Since 1892

Still making good gears, after 51 years of service to industry. A year more than a half century of experience in the manufacture of all types — spur, bevel, mitre, worm, rack, internal, etc. Also gears made to your order. In addition SIMONDS distributes Ramsey Silent Chain Drives and Couplings.

THE SIMONDS GEAR & MFG. CO.
25th and Liberty Sts.
PITTSBURGH, PA.

Move War Work Faster



Smoother running, easier to handle, Fairbanks Hand and Platform Trucks enable men to move things faster with less fatigue.

This saves labor, man-hours and money. It releases men to help speed your war work.

Another thing, Fairbanks Trucks are so ruggedly built that they withstand the most brutal punishment. Every part subject to excessive wear can be renewed easily and cheaply.

Write for Catalog No. 51-52.

THE FAIRBANKS COMPANY
393 Lafayette St., New York, N. Y.
Boston, Mass. Pittsburgh, Pa.
Distributors in Principal Cities.

Fairbanks PLATFORM, HAND and BOX TRUCKS

(*Continued from page 222*)

volts on the high-voltage side, and circuits of 2450, 4400, 7620 or 13,200 volts on the low-voltage side. It can be used on any of approximately 60 permanent substations on the customer's system, to increase their power output or as a substitute if emergency conditions shut down one of the regular substations.

The outstanding features of this mobile substation are its completeness and the ease with which it can be placed in service. The fuses and arcing horns are the only parts that are removed during transportation. Upon arrival at the site, the fuses and arcing horns are installed, the proper circuit connection is chosen by turning the handwheels brought out the side of the case, the operating mechanisms are unlocked, connections are made to the power lines, and the substation is ready for service.

MOTORISTS SHOULD USE INHIBITORS WITH OLD ANTI-FREEZE

Motorists who have saved their anti-freeze solutions are cautioned by the War Production Board to add "inhibitors", designed to prevent over-acidity and motor corrosion, before refilling their radiators with these solutions. At the same time, the WPB Conservation Division announced that industry has provided a supply of inhibitors to meet the needs of civilian motorists.

Inhibitors are marketed in the form of a liquid or powder that is poured into the radiator with the anti-freeze. It is advisable to clean the cooling system thoroughly before adding anti-freeze or inhibitor. Any sediment which has formed during the storage period should be carefully removed before the anti-freeze solution is re-used.

Although the inhibitor prevents rust and corrosion, it does not add to the freezing strength of the solution, and the anti-freeze should be tested by a dealer before re-use to determine its protective value. If fresh anti-freeze is required to strengthen the solution, it is preferable that the same type of anti-freeze be added.

QUARTERMASTER CORPS SUBSTITUTES SYNTHETIC BUNA-S FOR CRUDE IN BOOTS

Beginning immediately, all Army rubber footwear procured by the Quartermaster Corps will be manufactured with 30 percent less crude rubber than has been used heretofore, the War Department reports. Buna-S, the new government type of all-purpose, synthetic rubber, will be substituted for the crude rubber.

The saving of crude rubber resulting from the substitution of Buna-S in the manufacture of overshoes, shoepacs, jungle boots, waders and other types of rubber footwear is expected to exceed 70,000 pounds during July. Even greater savings are expected to be realized in the coming months when it is planned to lower still more the crude rubber content of Army rubber footwear by substituting Buna-S. The crude rubber content will be reduced gradually, according to present

(*Continued on page 226*)

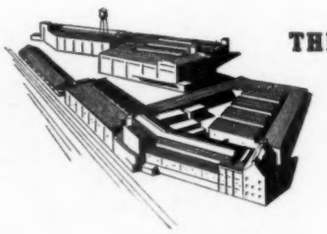
A step in the new Van Dorn process that helps us build better armor plate

This man is one of the army of Van Dorn metal craftsmen and his huge press shapes the armor we're building for aircraft, tanks and guns. This operation is part of a new war-borne Van Dorn process developed to improve armor production.

Behind this scene lies a metal fabricating plant that is recognized as one of the Nation's finest. It is manned by metal craftsmen endowed with 65 years' experience in producing an immense range of products. Its heat treating and metal working facilities are among the most modern and complete in industry.

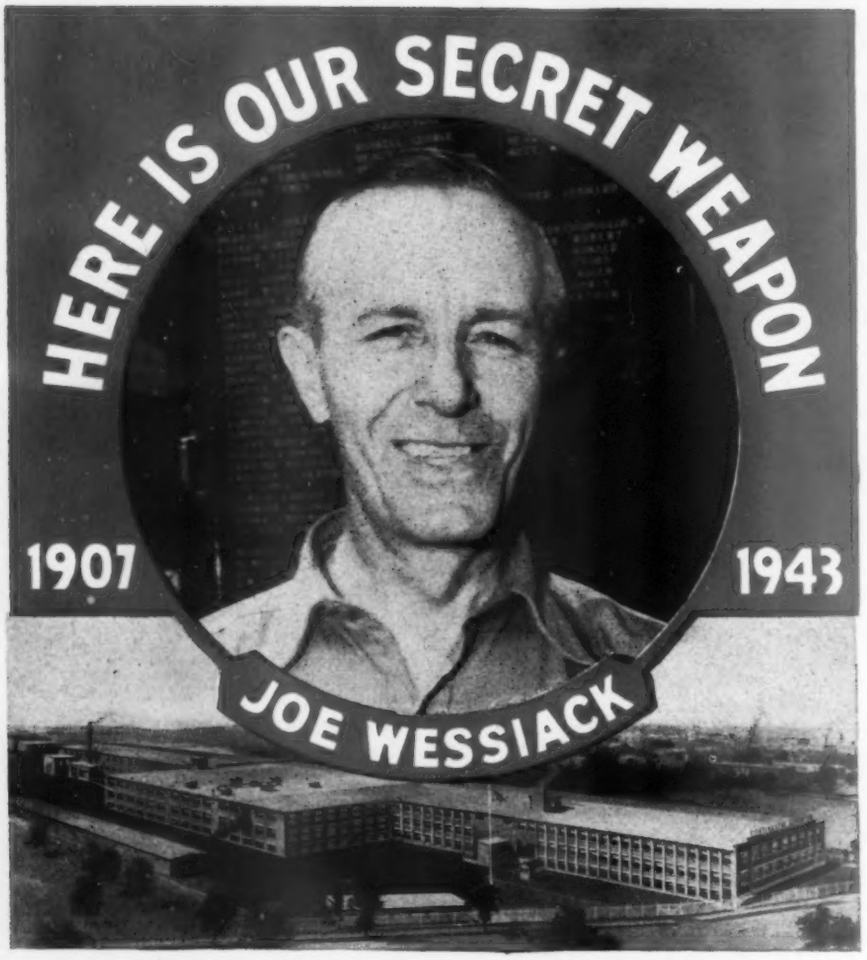
As the largest builders of prison equipment in America, Van Dorn has produced many of the most impregnable steel construction designs. Our engineers have devised new and better methods of fabricating innumerable metal products. One of their recent achievements is the development of the Van Dorn process of forming armor plate.

Our 65 year record of service to industry contains many worthwhile examples of how our design and engineering facilities can help you on war production and post-war development work.



THE VAN DORN IRON WORKS COMPANY • CLEVELAND 4, O.

SPECIALISTS IN METAL FABRICATION AND HEAT TREATMENT SINCE 1878



THIRTY-SIX YEARS' SERVICE
Without A Day's Absence!

One of the most decisive battles of this global war is being waged here in America — the fight against absenteeism of essential war workers.

Through two wars, epidemics, catastrophes, panic, depression, hurricane and devastating New England storms, Joe Wessiack has NEVER BEEN LATE OR ABSENT FROM WORK during his *THIRTY-SIX YEARS* of faithful service at the Continental Screw Company. There could be no greater challenge to absenteeism than this remarkable record! Rumors of war-end-ing secret weapons come and go. But, with Joe Wessiack's unfailing spirit of loyalty, responsibility and punctuality exemplified by every war worker in America there would be no need of secret weapons to shorten the road to victory . . . no fighter's life would be needlessly sacrificed because he received too little — too late!

• Every HOLTITE product goes to war! Our 'round-the-clock production provides weapons for our 'round-the-world armed forces.

We are 100% subscribed to more than 10% payroll deduction for War Bonds. On to Victory with the 3rd War Loan!

THE LIVES OF OUR FIGHTING MEN HANG BY A THREAD

* We are determined that any screw thread made at Continental will be the best that skill and science, experience and exceeding care can produce.

CONTINENTAL SCREW CO. New Bedford, Mass., U.S.A.
BUY MORE WAR BONDS

(*Continued from page 224*)

plans, until it is eliminated entirely from most types of rubber footwear.

Buna-S, from which the Army already is obtaining most of its synthetic tires, has almost the same properties and characteristics as crude rubber and is becoming available in ever increasing quantities. Generally, the products manufactured from it are, to all appearances and wearing qualities, exactly the same as the ones manufactured from crude rubber.

✓ ✓ ✓

AIR EXPRESS NOW SIXTEEN YEARS OLD

Commercial air express is observing its 16th anniversary. It was on September 1, 1927, that the first regularly-scheduled air express service was started in the United States. At some 26 cities from coast to coast, airline and express officials witnessed the start of an air cargo service destined to grow from 17,000 shipments in 1928 to more than 1,405,000 shipments last year.

Many of the first mail and express ships were single-engined, open cockpit biplanes. Packages were stowed wherever there was room. Often the pilot sat on the cargo. Coast-to-coast shipments required 36 hours and 16 re-fueling stops compared with present-day 16-hour, overnight transcontinental flights. Today's inter-city schedules are twice as fast as those of 16 years ago, while rates are 1/3 what they were in 1927. A 25-pound package from New York to the West Coast cost $65 in 1927; today the rate is $21. The most recent rate reductions, effective July 15th, were indicative of how growing air express volume benefits the shipper.

For the most part, air express is carried on the regular passenger flights of the airlines but two exclusive mail and express flights are now operated daily. One route runs between New York and Miami; and another, recently started, between New York and Los Angeles.

✓ ✓ ✓

RETURNABLE ENGINE CRATE PROGRAM SAVES $7,200,000

Anticipating a critical situation in the boxing and crating lumber, the Materiel Command, Wright Field, Dayton, Ohio, last spring initiated a Returnable Engine and Propeller Crate Program. To date, this program is paying off at the rate of saving 180,000,000 feet of lumber per year — a saving of $7,200,000 to the Army Air Forces.

This program is handled cooperatively by the Container Unit, Major R. A. Schmidt, Chief; Reclamation Salvage Branch, Captain J. A. Avery, Chief; and the Non-Metallic Unit, all of the Materiel Command. The latter Unit, headed by Major J. T. Houk, is a unit of the Materials Distribution Branch, under the direction of Lt. Colonel A. E. R. Peterka.

The Non-Metallic Unit, which is responsible for the procurement of lumber and plywood for Air Forces contractors, has secured maximum cooperation from manufacturers. Participation in the Returnable Crate Program is necessary be-

(*Continued on page 228*)

A broken part...a broken life

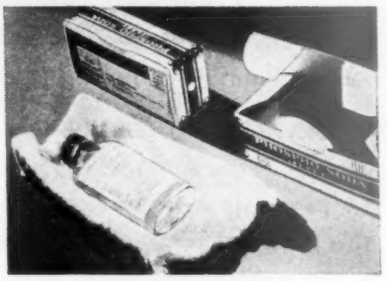
Defective packing is nothing less than sabotage. Check this insidious form of sabotage in *your* shipping room. A vital part, broken in shipping and *due to faulty packing,* may mean needless loss of life on the battle front. *Making* implements of war is not enough. They must be *packed* correctly...to reach our fighting men undamaged.

Today, in defense plants throughout the nation, KIMPAK* Creped Wadding is widely used for packing war products. For KIMPAK is soft and resilient to absorb the jolts and jars that often cause chipping, chafing, breakage in transportation.

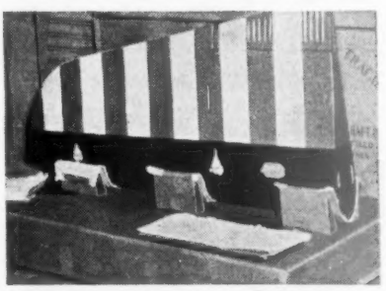
Your finished products may be made of glass, plastic, wood, metal. They may be large or small, light or heavy, square, round, smooth, rough or irregular in shape. No matter. KIMPAK provides exactly the packing protection that they need.

In many cases, KIMPAK is the means of reducing the over-all size of the packaged product, thus conserving storage, shipping, cargo space. There is even a special, moisture-*resistant* KIMPAK for export packaging...and a moisture-*absorbent* KIMPAK that can *absorb more than 16 times its own weight in liquids.*

Get KIMPAK facts without delay. Mail coupon now for illustrated Booklet and full details.



Special KIMPAK Creped Wadding can absorb 16 times its own weight in moisture.



KIMPAK provides shipping protection for all types of airplane parts.

KIMBERLY-CLARK CORPORATION P-1048
Established 1872, Creped Wadding Division
Neenah, Wisconsin
Send illustrated booklet and full details about KIMPAK.

Name _____

Street _____

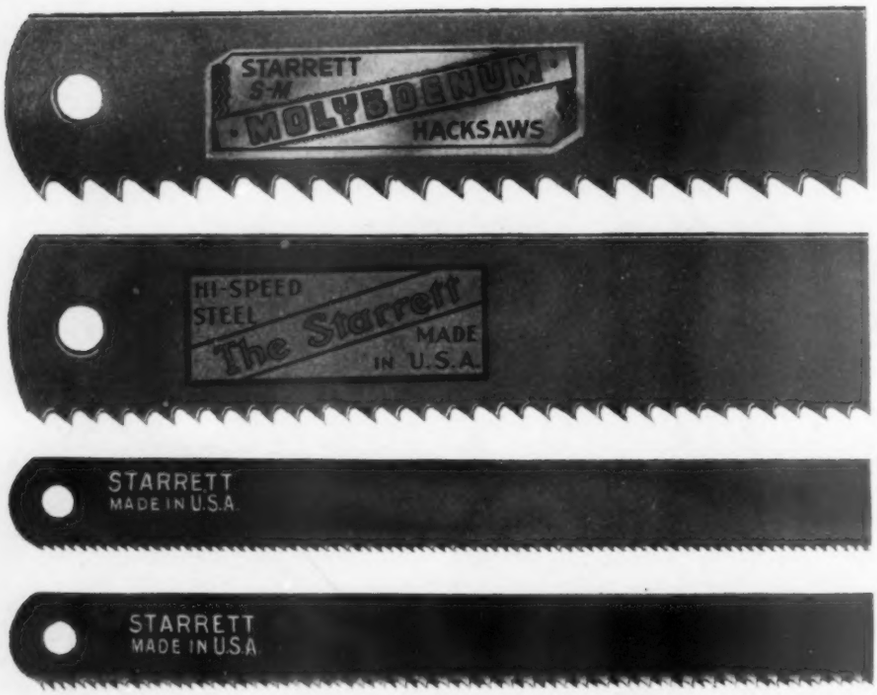
City _____ *State* _____

PACK WITH Kimpak CREPED WADDING

REG. U.S. PAT. OFF. & FOREIGN COUNTRIES

*KIMPAK (trade-mark) means Kimberly-Clark Wadding.

KIMPAK IS MANUFACTURED BY KIMBERLY-CLARK CORPORATION, NEENAH, WIS.



The STARRETT Name on a HACKSAW has extra significance

in times like these when there is no time to take chances on the quality and uniformity of blade performance. Blades bearing the Starrett name or label must uphold the reputation of the "World's Greatest Toolmakers."

Whatever the job calls for—Standard Steel for hand sawing, S-M Molybdenum for fast cutting, long lasting power or hand sawing, High Speed Steel for power sawing of extra hard alloy steels—ask your mill supply distributor for blades that are back of—and backed by—the name STARRETT.

...and on a Metal Cutting BANDSAW

the STARRETT name is equally significant. Starrett hard tooth, flexible back Bandsaws are made in 10 widths (3/32" to 1"), 3 gauges and 8 pitches —in coils of any length or cut to length and welded, ready to use.

Ask your mill supply distributor for STARRETT Bandsaws.

THE L. S. STARRETT COMPANY
ATHOL, MASSACHUSETTS, U. S. A.
World's Greatest Toolmakers

STARRETT

PRECISION TOOLS • DIAL INDICATORS • GROUND FLAT STOCK
HACKSAWS • METAL CUTTING BANDSAWS • STEEL TAPES

(*Continued from page 226*)

fore any new lumber and plywood is allocated to a contractor.

This is important for the situation in softwood plywood has become increasingly serious within the last four months.

The orders which the plywood mills had on hand with AA-1 ratings have increased from 85 to 97 per cent, and the mills have recently been receiving orders at the rate of 50,000,000 feet per week, which is exactly double their capacity to produce. Obviously, the only solution to the problem was to allocate the plywood so essential needs will be served.

These conservation measures are being effected not only by Air Forces contractors but by the Air Service Command in its packaging problems at the Depots. The use of plywood for construction purposes is being prohibited and plywood generally is being restricted — so far as container material is concerned — to the packaging of airborne freight and other essential uses. Conservation measures are also being utilized in requesting the thinnest plywood be used, within safe limits, in packaging material, and the use of tongue and grooved lumber is also being restricted to only necessary specifications and applications.

The Returnable Engine Crate Program is an outstanding example of the results that can be obtained by the cooperation of industry and government.

OPA REPORTS 172 INDUSTRY ADVISORY COMMITTEES

OPA's efforts to obtain a sound working relationship with business have brought about tangible results with the formation to date of 172 industry advisory committees, the Office of Price Administration announces.

Most of these committees have already met, elected officers, drawn up by-laws appointed sub-committees to make studies of pressing problems, have raised money to collect necessary information, and are showing a determined effort to work for the stabilization of prices, OPA said.

The oldest committees, in iron and steel and in paper, have a long record of continuous work with the agency on price regulations and amendments. Many of these committees have met frequently, have given detailed and technical advice, have proposed minimum specifications, have collected cost data and profit reports to back up price adjustment recommendations, have suggested the rewording of regulations to accord more closely with trade practices and in the interest of simplification and more specific price control.

OPA said that in the near future it expects to have complete coverage of the agency with from 250 to 300 industry advisory committees.

At OPA's national office careful records are kept of the committees, their membership, their meetings, their recommendations and their progress in effective consultation. Responsible for this co-

(*Continued on page 230*)

NEED ANY HELP...

On GOVERNMENT SPECIFICATIONS *for* STAINLESS STEEL?

WHEN YOU WANT TO KNOW ABOUT STAINLESS...

GOVERNMENT Specifications are complex . . . every word has meaning. Condensing them into simplified form or commercial grade designations involves the risk of omitting important descriptive detail.

You may be familiar with A. I. S. I. type numbers, and believe certain "specs" cover the same analysis as the type number. Yet there are other details to consider . . . special physical properties, tolerances as well as special testing requirements.

Very often "specs" permit latitude in your selection of analysis, physicals, tolerance and almost always — finish. Making use of allowable options for a specific use may greatly ease your problems of procurement or fabrication and here RUSTLESS can help you.

We produce nothing but Stainless Steels and through our daily familiarity with their specifications, we are in position to help. Write or wire the nearest Rustless Office for advice.

Ask

RUSTLESS

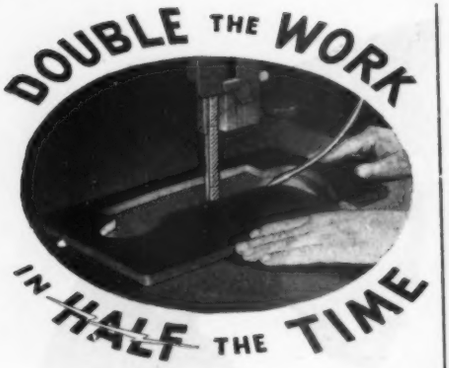
Iron and Steel Corporation

Baltimore, Maryland

CORROSION AND HEAT-RESISTING STAINLESS STEEL

Rustless *Producing* STAINLESS STEEL *Exclusively*

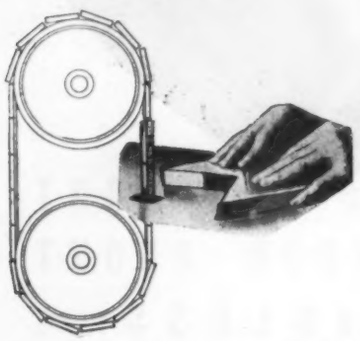
SALES OFFICES: BUFFALO • CHICAGO • CINCINNATI • CLEVELAND • DETROIT • LOS ANGELES • NEW YORK • PHILADELPHIA • DISTRIBUTORS IN PRINCIPAL CITIES



Used to be that a certain job took 8 hours to hand file. Later, a jig file cut the time to 5 hours. Now the same work is done in 1 hour with a DO-ALL Band File.

And here's why: 50 to 200 feet of file pass over the work every minute — a continuous file traveling evenly in one direction, with no back stroking.

So, whether it's metal, plastic, plymetal or something really tough, a DO-ALL Band File will cut filing time and man hours down to a minimum and produce a finish as smooth as a mirror. There's a money-saving surprise awaiting all who have never tried DO-ALLS.



DO-ALL BAND FILES

Each consists of a number of 3-inch file segments mounted on a spring steel band with a specially designed precision interlock. As the band passes over the wheels, the interlock between each segment disengages and then re-locks securely into a rigid filing surface before reaching the point of work.

Available in various styles and widths to file any material.

FREE TEST LABORATORY SERVICE

A clinic for slow or difficult file jobs. Send us sample of your material and we'll put it through a series of tests, furnishing you a written report as to proper file, best speed, etc. Or, consult the DO-ALL man in your locality for valuable aid right in your plant.

DO-ALL FILE BOOKLET — Pocket size, easy to handle and read — well illustrated. Send for copy today.

THE DOALL COMPANY

1214 Thacker Street, Des Plaines, Illinois

DO-ALL Offices in 25 cities, with a staff of trained engineers to give you quick service on DO-ALL Band Files and Saws, Contour Machines, Gage Blocks and Surface Grinders.

AIM TO SPEED AIRCRAFT STEEL

Aircraft Scheduling Unit Effects Three Changes To Expedite Deliveries to Contractors

To meet current problems in distributing steel through official aircraft warehouses, the Aircraft Scheduling Unit has effected three new features for expediting deliveries to aircraft contractors. These changes were announced by the office of Captain A. F. Hitchiner, Chief of the Warehouse Sub-Unit of the Materials Distribution Branch, under Lt. Colonel A. E. R. Peterka, in the Materiel Command, Wright Field, Dayton, Ohio.

These changes cover three important phases of the warehouse program:

(1) *Back Orders* — Official aircraft steel warehouses are now permitted to accept back orders from aircraft contractors for small quantities of earmarked steel.

The warehouses may accept back orders but may not hold the materials in the warehouse to fill these orders. The warehouses are not *required* to accept a back order but they will do so if the item is of a standard size normally carried by the warehouse, and if the warehouse believes it will be able to fill the order.

If, at a later date, it appears that shipment cannot be made as scheduled, the warehouse will immediately notify the aircraft contractor, explaining the circumstances, so the contractor may immediately locate another source.

(2) *Release of Material from Warehouse Stocks*—In order to expedite the release of steel from earmarked aircraft warehouse stocks—when the quantity required is greater than that permitted in the Earmarked Stock Directive—the Aircraft Scheduling Unit has authorized the Materials Coordinators in the District Procurement Offices to issue releases on all items, except steel tubing, which are required in quantities of five tons or less. For releases of quantities greater than five tons, it will be necessary to have the formal release made by Aircraft Scheduling Unit after certification of the emergency by the Procurement District Office. In making a request for a release for quantities greater than permitted in the Earmarked Stock Directive, the aircraft contractor must submit to the District Procurement Office full details of the reasons for the request.

(3) *CMP Regulation #2*—To assist manufacturers whose requirements for alloy steel—if specified over the period of their contract—would amount to extremely small quantities per month, the Aircraft Scheduling Unit has advised these contractors to utilize the provisions of the Controlled Materials Regulation #2.

Paragraph C3 of that regulation permits an exception to the 60-day inventory restriction. Under this program, contractors may purchase up to the amount shown on Schedule A attached to that regulation.

For example, a contractor with scheduled requirements for 300 pounds of 1" round alloy cold drawn bars per month for six months may place one order with a warehouse for immediate delivery of the entire 1,800 pounds, since that amount is less than the 2,000 pound maximum shown on schedule A for alloy cold finished bars.

The provision enables the manufacturer to accept deliveries of a controlled material even though the quantity of this material is greater than he would consume during the succeeding 60-day production period as provided in Controlled Materials Regulation #2, paragraph B1.

Aircraft manufacturers should remember, however, that while the regulation premits them to purchase up to 2,000 pounds of alloy or stainless steel, Earmarked Stock Directive Number 6 does not permit a warehouse to sell more than the quantities listed in Schedule B attached to that directive without special permission.

Manufacturers wishing assistance on any of these new phases of the steel warehouse program should contact their Procurement District Office.

* * *

OPA REPORTS 172 INDUSTRY ADVISORY COMMITTEES

(*Continued from page 228*)

ordinating program is Industry Council, a body of business officials attached to the Administrator's staff, of which L. H. Harris is the chairman. Industry Council operates by committees and Mrs. Ethel B. Gilbert is chairman of the committee responsible for the effective use of industry advisory committees throughout the agency.

* * *

ADVOCATE HOT FINISHED SEAMLESS STEEL TUBES

Substitution of hot-finished for cold drawn seamless steel tubing is recommended by the Seamless Steel Tube Institute as a means of increasing output of tubing to meet the very large demands of essential war needs. This recommendation covers the larger sizes, with heavier walls, which are so often machined. Generally speaking, this will mean tubing of 3" O.D. or larger, depending upon the manufacturer.

Every foot of seamless tubing that can be made and shipped in the hot-finished condition represents an extra foot of tubing that can be cold drawn for aircraft or other war equipment that requires such tubing. Uses for which hot-finished can be used in place of cold drawn include those in which the tubing is machined or in which appearance may be temporarily sacrificed as is being done in the construction of many machine tools.

This problem was recognized by the War Production Board early in the war effort and as a consequence, the Board issued a circular letter to users of seam-

(*Continued on page 232*)

PURCHASING AGENTS . . .

Always keep in mind

Combined in the Timken Bearing are ALL the advantages listed here . . . Where else can you find them?

HIGH LOAD CAPACITY — Any desired combination of radial and thrust loads.

SELECTIVITY — Over 3,000 sizes and types to choose from.

ADJUSTABILITY — To any preload.

PRECISION — To the necessary degree for any application.

FIELD ENGINEERING SERVICE — Available from strategically located district offices.

SALEABILITY — Timken Bearing Equipped Machines preferred and demanded by users everywhere.

A symbol of quality for every piece of equipment with which it is associated.

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

(*Continued from page 230*)

less steel tubing and emphasized the importance of substituting hot-finished for the cold drawn product. However, as the war effort has increased, this subject has become proportionately more important and the Seamless Steel Tube Institute is endeavoring to promote the idea of making this change. While facilities of tube mills have been tremendously increased, output is still short of the demand. This situation can be eased by the recommended substitution since it will eliminate the time lost in annealing and heat treating.

The Institute maintains an office in the Gulf Building, Pittsburgh and will be glad to assist tube users with information on making such conversions as well as any other matters relating to the use of tube products.

* * *

PRODUCTION BOTTLENECKS ELIMINATED

Considerable progress has been made recently by WPB and Industry in eliminating many serious bottlenecks, declared Donald M. Nelson, Chairman of the War Production Board, in a recent report. Many of these accomplishments have been given considerable public attention, while little is known of the progress made on smaller but equally important programs. In this latter group, the following substantial achievements have been made:

The production problem in magnesium and aluminum has been overcome. In fact, efforts are now being made to find further uses for magnesium.

Quartz crystal output, important in communication, has been increased markedly, with the notable assistance of conservation and substitution programs.

A new important domestic industry, diamond dies, has been erected almost overnight, freeing us from previous dependency on precarious overseas sources.

Substitution programs have been of considerable assistance in remedying the tight situation in jewel bearings, important in various types of precision instruments.

Another achievement is the development of a generally satisfactory situation in steel. Although total requirements are still greater than supply, needs for all important programs are being met through increased production and better distribution.

* * *

FIRE PROTECTION PROGRAM ESTABLISHED BY WPB

A means of providing fire protection for the nation's most essential resources has been established by the War Production Board.

Under the WPB fire protection policy, which is limited to fire extinguishing equipment, protection will be provided only those resources assigned A ratings by the Resources Protection Board. Other resources will be provided fire protection only when specifically approved by that Board.

This, it was explained, should not be interpreted as denying equipment to any plant that can prove its urgency, but urgency must be established before the use of critical resources can be justified. This is necessary to insure the best possible use of the limited quantity of materials and equipment which can be spared for this purpose.

At the same time, WPB announced the creation of a Fire Protection Committee to which all applications for fire extinguishing equipment involving construction will be directed. This committee will be headed by Harlow Lewis, Chief of the Materials Control Branch of the Project Division, who, with the advice of the other members of the committee, will determine what constitutes reasonable fire protection. In making these decisions, the committee will take into consideration the nature of construction, the occupancy, and exposure of the facility.

Other members of the Fire Protection Committee will include representatives of the Safety and Technical Equipment Division; the Resources Protection Board; the Fire Prevention Section, Internal Security Division; Office of Provost Marshal General, War Department; and the Fire Prevention Section, Bureau of Yards and Docks, Navy Department. The staff necessary to service the committee will be provided by the Project Division.

Only applications for equipment involv-

(*Continued on page 234*)

Castings FROM 1/2 OZ. TO a TON

* *This semi-steel housing for a machine tool is typical of the intricate castings produced in our foundries.*

FOR gray iron, semi-steel or high test semi-steel castings, call on Forest City Foundries.

For more than 50 years, we have been producing high quality castings for widely diversified industries such as:

- Automotive
- Household appliances
- Pressure Pump
- Machine Tool

Office, electrical and agricultural equipment

Two modern foundries, both equipped for efficient, fast production are at your service. A call will bring a representative to discuss your casting needs and our ability to meet them.

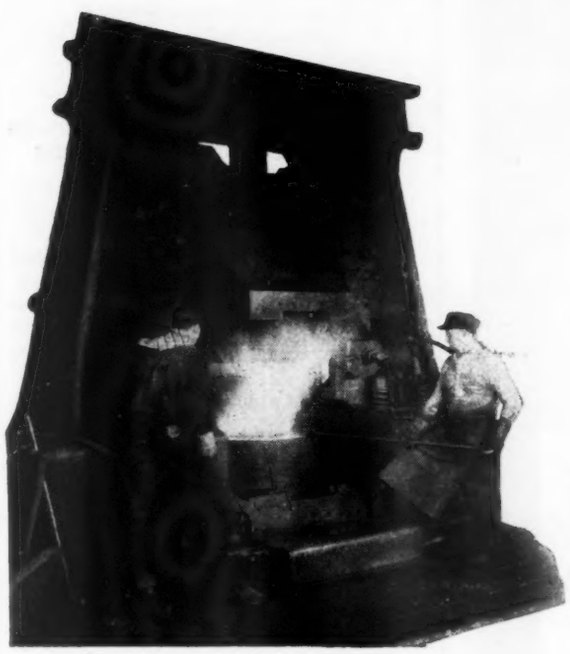
Gray Iron, Semi-Steel and High Test Semi-Steel Castings

PHONE PROSPECT 5040

THE FOREST CITY FOUNDRIES CO.

2500 WEST 27th ST. • CLEVELAND, OHIO

Forging IN THE WORLD'S LARGEST VALVE PLANT



HERE in the great forge shop of Crane's Chicago works, rows of hammers are pounding raw steel into bonnets and stems—discs and flanges, shaping parts for valves that our armed forces and war industry need to bring ever closer the day of final victory.

In the forge shop—as in all departments of Crane Co.—production has been vastly increased to meet war's insistent demands. And it is gratifying to know that in times of war as well as in times of peace, America looks to Crane to produce quality valves in quantity for controlling the flow of water and steam—of air and oil.

Crane is today, as in the past, making valves and fittings—making them in vastly increased quantities. When the war is won, this production backed by the experience and manufacturing "know hows" required in making valves for war, promises America's peacetime industry rapid delivery on high quality flow control equipment.

CRANE CO., 836 S. Michigan Ave., Chicago, Illinois

ARMY E NAVY

CRANE VALVES

The Maintenance Man's Third Arm!

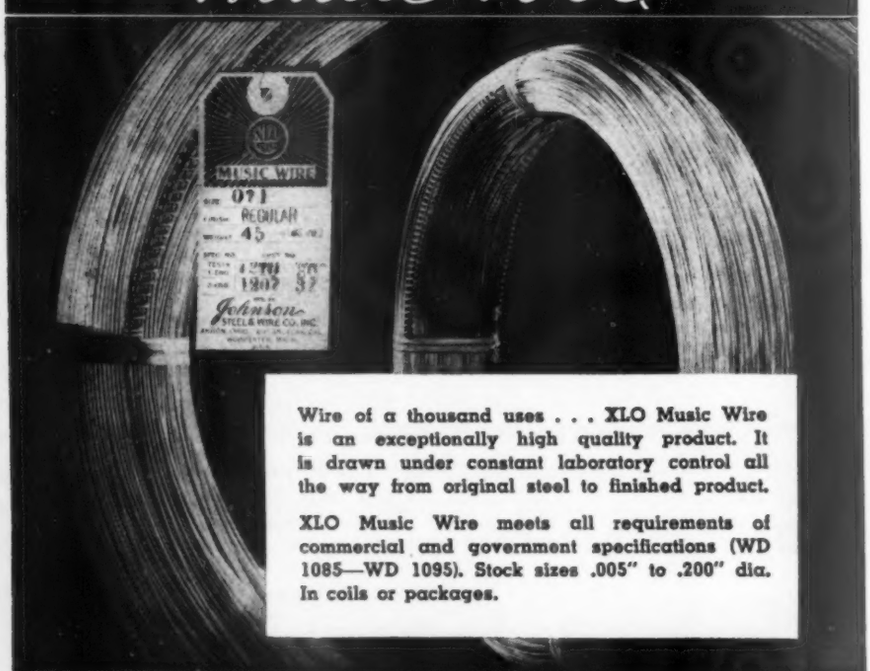
Simplex No. 610 Util-A-Tool, 10-ton capacity.

The Simplex Util-A-Tool has a thousand uses in maintenance, production and construction. It readily pulls spoked or plate center wheels of any size, gears, pinions and frozen members. Pushes, spreads, clamps and lifts.

Templeton, Kenly & Co., Chicago (44), Ill.
Better, Safer Jacks Since 1899

Simplex
LEVER - SCREW - HYDRAULIC
Jacks

JOHNSON XLO
Music Wire



Wire of a thousand uses . . . XLO Music Wire is an exceptionally high quality product. It is drawn under constant laboratory control all the way from original steel to finished product.

XLO Music Wire meets all requirements of commercial and government specifications (WD 1085—WD 1095). Stock sizes .005" to .200" dia. In coils or packages.

JOHNSON STEEL & WIRE CO., INC.
WORCESTER 7, MASSACHUSETTS.
NEW YORK ATLANTA AKRON CHICAGO LOS ANGELES

(*Continued from page* 232)

ing construction, such as sprinkler systems, hydrant and hose systems, and stand pipe systems, will be directed to the Fire Protection Committee. All other priority applications for fire extinguishing equipment will be processed by the Safety and Technical Equipment Division.

The Resources Protection Board has delegated authority to the Fire Protection Committee to approve the installation of fire extinguishing equipment involving construction in facilities other than those rated "A" by the Board, as well as the authority for concurrence in granting or denying priority assistance for the equipment. Similarly, authority was delegated to the Safety and Technical Equipment Division for approval of applications not involving construction.

In general, the fire protection policy provides that the materials, components, facilities, and manpower required for fire protective equipment be made available insofar as compatible with other essential needs and with the objective of securing maximum protection with minimum use of critical materials.

GLYCERINE SUBSTITUTES TOXIC

Former users of Glycerine who are now glycerine substitute users were warned by the Fats & Oils Branch of the Food Distribution Administration that some of these substitutes are definitely toxic. Among these were classified ethylene glycol, diethylene glycol (diglycol), carbitol, and polyethylene glycol.

A memorandum to glycerine consumers states that "under no circumstances should these or other toxic substitutes be used in any product whether food, drug, or cosmetic, which is likely to be taken internally or otherwise absorbed by external application."

THE NATIONAL WAR FUND—SEVENTEEN WAR RELIEF AGENCIES COMBINE

Under a single banner and in a single campaign, the National War Fund has been created to unite the fund raising activities of seventeen major war-related relief agencies. These have been classified into five basic categories, and in toto the merger represents over a hundred smaller agencies. The five divisions are as follows:

1. USO (United Service Organizations)
2. United Seamen's Service
3. War Prisoners Aid
4. United Nations Relief (Twelve major Relief Societies)
5. Refugee Relief

The National War Fund is now in the midst of a campaign to raise $125,000,000 for use by these various agencies. In many places the National War Fund will join forces with local war chests or community funds. A single contribution to the Fund contributes to the activities of all of the agencies combined therein. Thus donors can more easily budget their wartime giving, though donors may designate their gifts to any one or more of the member

(*Continued on page* 236)

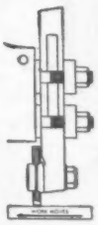
HOW AND WHY

WILLIAMS' TOOLS AID WAR PRODUCTION

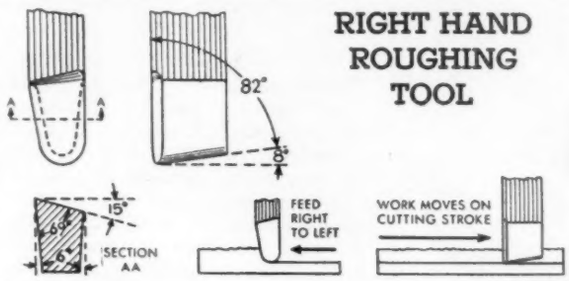
GRINDING CUTTERS FOR WILLIAMS' TOOL HOLDERS

DATA SHEET C, covering the various cutters used with Williams' Planing-Tool Holders in machining cast iron.

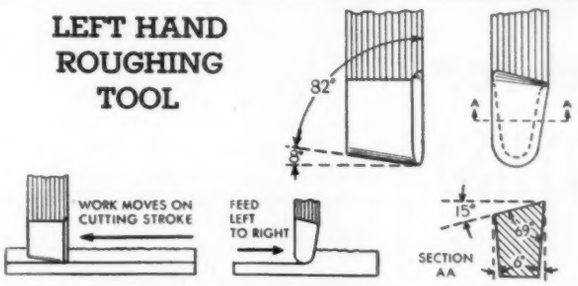
● Williams' Planing-Tool Holders are manufactured in seven sizes, accommodating cutters from 1/4" x 3/8" to 7/8" x 1-1/8". The following grinding instructions apply to cutters of all sizes. Holders should be clamped in the Tool Head to face, as shown at right.



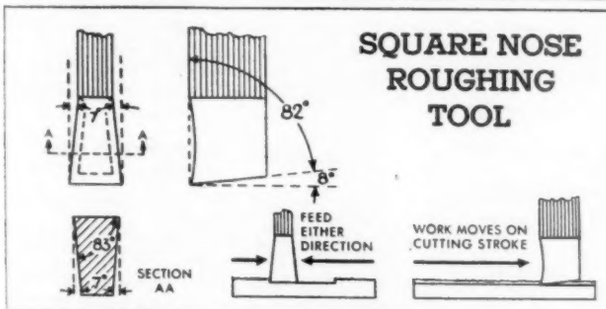
RIGHT HAND ROUGHING TOOL



LEFT HAND ROUGHING TOOL



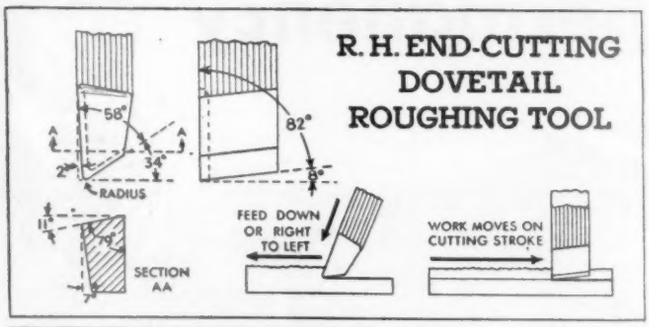
SQUARE NOSE ROUGHING TOOL



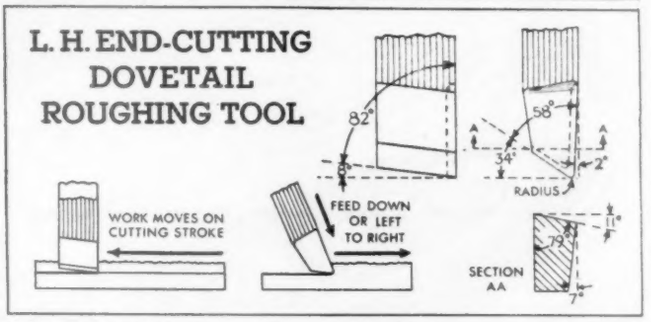
Sold by Leading Industrial Distributors Everywhere

J. H. Williams & Co., Buffalo 7, N. Y.

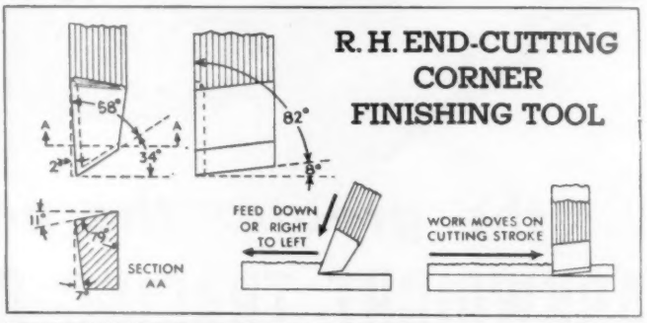
R. H. END-CUTTING DOVETAIL ROUGHING TOOL



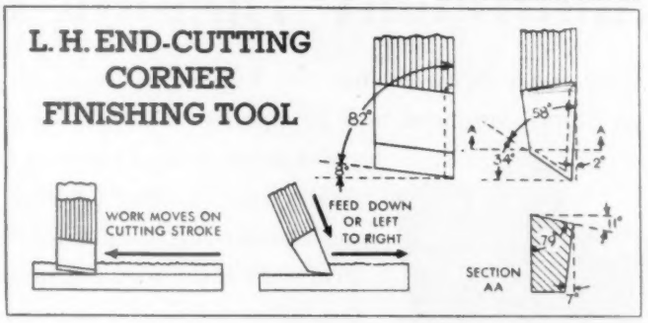
L. H. END-CUTTING DOVETAIL ROUGHING TOOL



R. H. END-CUTTING CORNER FINISHING TOOL



L. H. END-CUTTING CORNER FINISHING TOOL



Data Sheets A and B on this subject have already appeared. Additional Data Sheets on grinding of other cutters for Williams' Tool Holders will follow. Reprints of Data Sheets are available on request.

WILLIAMS
SUPERIOR DROP-FORGED TOOLS
Headquarters for over half a century for DROP-FORGINGS and DROP-FORGED TOOLS

L HOLDERS | "C" CLAMPS | LATHE DOGS | WRENCHES OF ALL TYPES | PIPE TONGS | THUMB NUTS SCREWS | HOIST HOOKS | EYE BOLTS
VISES

The greater the need for permanency

. . . the greater the need for ARKWRIGHT TRACING CLOTHS!

How can you make sure the important drawings you're working on at this moment will blueprint as satisfactorily three or four years from now as they do today? By using Arkwright Tracing Cloths! For, as any experienced draftsman will tell you, Arkwright Tracing Cloths won't tear or fray no matter how often they're blueprinted. Nor will they become brittle or opaque with age. Use Arkwright – it pays! Arkwright Finishing Company, Providence, R. I.

Arkwright TRACING CLOTHS

AMERICA'S STANDARD FOR OVER 20 YEARS

(*Continued from page* 234)

agencies. The programs of the agencies are characterized as being practical, free from duplication, and flexible enough to meet the changing needs of the war. Their budgets are modest and subject to periodic review both by consulting experts in Washington and by the Budget Committee of the National War Fund.

PRIORITIES REGULATION RECORDS MAY BE KEPT IN FILM FORM

WPB moved to conserve filing space for persons who are required to keep records under the terms of Priorities Regulations and other WPB Regulations and orders, by granting them permission to keep such records in the form of microfilm or other photographic copies.

The permission is granted in Interpretation No. 6, to Priorities Regulation No. 1. Official estimates as to the amount of filing space which might be conserved are not available, although it is generally believed that it is substantial.

CONTROLLED MATERIALS PLAN BOOKLET

Sixteen-page booklet, title, "The Controlled Materials Plan—A Simplified Explanation of Purposes, Principles and and Procedures," which affords simple explanation of CMP aimed to assist in the proper identification of purchase orders, and the application of correct priority ratings, is being distributed by Manning, Maxwell & Moore, Bridgeport, Conn., manufacturers of gages, valves and industrial instruments. The information therein represents government publications, regulations, interpretations and rulings boiled down to "the most pertinent information.

The booklet explains CMP, lists the 19 controlled materials, explains "A" and "B" products, tells how controlled materials are allotted; tells how controlled materials are distributed to producers, "What Governs Deliveries," outlines MRO regulations, and explains how manufacturers of "unclassified products" can secure priority assistance.

You can procure a copy of this booklet by checking No. 1 on the coupon on Page 10 of this issue of PURCHASING, or by writing direct to the manufacturer.

CMP FORMS SUBSTITUTED FOR P-19 ORDERS

Forms CMPL-127 and CMPL-224 are being generally used as substitutes for order in the P-19 series, the War Production Board points out. Deliveries of materials or equipment may be made on ratings assigned on these forms, if such deliveries are permitted under WPB orders pursuant to preference ratings assigned on a P-19-h order or any other order in the P-19 series.

Prior to July 1, applications on Form PD-200 were approved by the issuance of a P-19-h order or some order in the P-19 series, which assigned a preference rating to the materials required. Recently

(*Continued on page* 238)

EVER TAKE A MACHINE GUN APART?

A SOLDIER has to be able to do it blind-folded. And because he knows how, parts, accurate to the thousandths of an inch and produced in mass-production quantities, come apart and go together again in a matter of minutes.

Even the layman can understand how vital is precision in every item of fighting equipment like this. Take the bullet belt links for example. They've got to be uniformly perfect or the gun will jam in combat.

That unfailing uniformity starts with the strip steel from which those bullet links are made.

Every pound of American Quality Cold Rolled Strip we furnish in vast quantities for these high precision parts has to be—and *is*—"right on the nose" in chemical analysis, structure, dimensions and straightness. Otherwise, subsequent operations would fail to produce perfect links.

And because speed of manufacture is important, we further insure perfect workability in this material by bright annealing in furnaces of improved design. It enables the fabricator to set his dies and machinery for top-speed manufacture with full confidence of getting the precise results desired.

If you are fabricating cold rolled strip steel for war products, our metallurgical engineers will gladly help you use it to the best advantage.

AMERICAN STEEL & WIRE COMPANY

Cleveland, Chicago and New York

Columbia Steel Company, San Francisco, *Pacific Coast Distributors*
United States Steel Export Company, New York

USS

American Quality
COLD ROLLED STRIP STEEL

COLD FINISHED STEEL BARS
MANUFACTURERS' WIRE · STAINLESS
STEEL SPRING WIRE · WELDING WIRE
WIRE SPRINGS

UNITED STATES STEEL

Because it gives practical time-saving short cuts on 54 essential maintenance jobs, this NEW Oakite DIGEST will prove of invaluable help to your Maintenance Department.

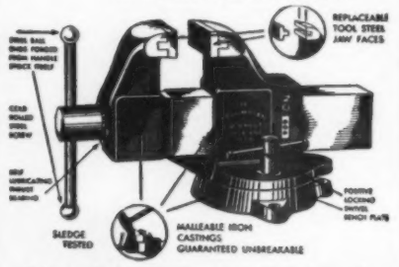
Based on the successful experience of more than a thousand plants, it outlines how Oakite cleaning and de-scaling materials are expediting plant maintenance by conserving man-hours, shortening equipment down-time, speeding up repair and overhaul work, eliminating fire hazards. Write for your FREE copy TODAY!

OAKITE PRODUCTS, INC.
54 Thames St., NEW YORK 6, N. Y.
Technical Service Representatives Located in All Principal Cities of the United States and Canada

OAKITE SPECIALIZED CLEANING

COLUMBIAN VISES *offer You*

★ *LONG LIFE*
★ *EFFICIENT SERVICE*
★ *SPECIAL APPLICATIONS*
★ *LOW MAINTENANCE*
★ *CONVENIENT INSTALLATION*
★ *WIDE SELECTION*



Price alone does not determine the cost for vises. Service is all important. Columbian Malleable Iron Machinists' Vises are guaranteed unbreakable. See your Columbian Distributor.

THE COLUMBIAN VISE & MFG. CO.
9029 Bessemer Avenue Cleveland 4, Ohio
The World's Largest Makers of Vises
BUY WAR BONDS

ARMSTRONG-BRAY
STEELGRIP
FLEXIBLE BELT LACING

Prompt Delivery!

—on both standard types of belt lacing.

STEELGRIP that is applied with a hammer that penetrates belting easily and clinches securely to make a strong, flexible smooth joint. 2-piece hinged rocker pins take up wear. In boxes or long lengths for wide belts, it compresses belt ends and prevents fraying, 8 sizes.

BELT HOOKS

Applied with any standard make lacing machine, these belt hooks come on double (patented) aligning cards that hold hooks in perfect alignment and prevent card end waste. 6 sizes.

ARMSTRONG-BRAY & CO.
"The Belt Lacing People"
5378 Northwest Highway Chicago, U.S.A.

(*Continued from page* 236)

forms CMPL-127 and CMPL-224 have been prepared and put into use as substitutes for P-19-h orders. These forms not only assign a rating to the certain materials required, but serve also as instruments for allotment of controlled materials required.

IDENTIFICATION SYMBOL ON ORDERS UNDER CMP

Use of the quarterly identification symbol in connection with the placement of orders under CMP procedure has been clarified through the issuance of Interpretation 14 of CMP Regulation No. 1, recently announced by the War Production Board.

The quarterly identification need not be shown in placing orders for Class B product components or other production materials (except controlled materials). For example, the identification, "Preference Rating AA-1, Allotment Number W-1" is sufficient for the placement of an order for a Class B product.

The allotment number, however, must be shown on all orders placed with reference ratings under CMP, even though the quarterly identification is not required. Applications for controlled materials must include a Claimant Agency pattern and manufacturers will be unable to indicate it unless allotment numbers are placed on orders. For example, a Class B product producer would be required to indicate that he was producing 50 percent of his products for the Army, 25 percent for the Navy, 20 percent for Lend-Lease and 5 percent for Civilian Supply, if such was the case.

The quarterly identification (3Q43, 4Q43, etc.) indicates the quarter for which an allotment is valid and must be indicated (1) on all authorized controlled material orders, except those being purchased under a blanket symbol such as MRO and CO, and (2) on all allotments. The identification, when it is required, must immediately follow the abbreviated allotment number—for example, W-1-3Q43.

UTILITIES MAY GRANT EXTENSIONS WITHOUT FILING APPLICATIONS

The Office of War Utilities eliminated a vast amount of paper work today by simplifying the system by which applications for extensions of utility services involving small amounts of materials are handled.

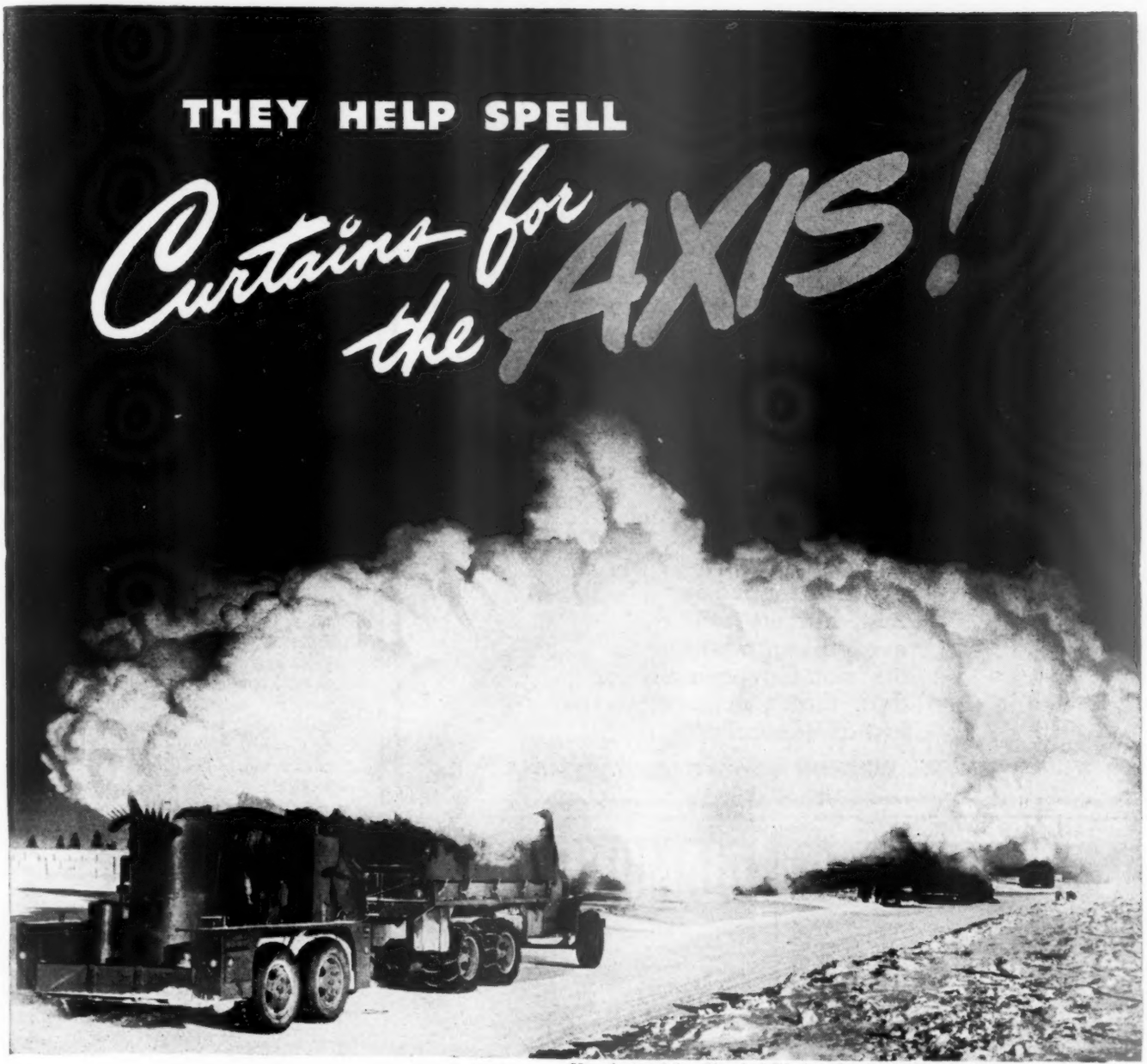
A new order, U-1-f, permits utilities to grant extensions without filing applications with Washington when the restrictions of the order are met. This implies no relaxation of the restrictions, but eliminates processing of eight to ten thousand applications a month, most of which have been granted as a matter of necessity.

Under the new rules, domestic consumers seeking extension of electric, gas or central heating service must be located in a critical housing area as determined by the National Housing Administration. This list is attached to the order as Sched-

(*Continued on page* 240)

THEY HELP SPELL

Curtains for the AXIS!



Manufactured for Chemical Warfare Service by The Heil Co., Milwaukee, Wis.

Under these curtains of smoke, beach heads are established, battle lines move forward, and the United Nations forces roll on to keep appointments in Rome, Berlin and Tokyo. Statistically, enemy fire effectiveness can be reduced as much as 85 per cent by these smoke machines. Engineers who designed them specified Auto-Lite cables, relays, and starting, lighting and ignition units.

Here's proof again that Auto-Lite gets the call when dependability is a must for electrical automotive units and complete electrical systems on jeeps and half-tracs, on crash boats and trucks, on fighter planes and tanks.

By building ever greater dependability into these parts and products, Auto-Lite is helping our Armed Forces spell "Curtains for the Axis."

THE ELECTRIC AUTO-LITE COMPANY
SARNIA, ONTARIO TOLEDO, 1, OHIO

BUY WAR BONDS

AUTO-LITE

In all its 26 great manufacturing divisions, Auto-Lite is producing a long list of items for America's Armed Forces on land, sea and in the air

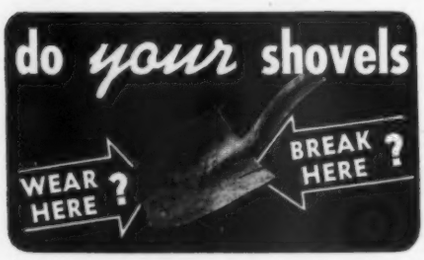
"THE OLD RELIABLE"

In the emergency existing today we are proud to be a part of the Nation's great manufacturing machine which is carrying on in spite of handicaps.

We must and will deliver Government orders first, but we will do everything possible to fill non-Government orders that you send us as fast as we can.

LOWELL WRENCH CO., WORCESTER, MASS.

do *your* shovels



RAZOR-BACK Shovels are 60% thicker at these points of wear and strain—

Available for Essential Needs

THE UNION FORK & HOE CO.
691 Hocking Street Columbus 15, Ohio

Also Stone, Ballast, Industrial Forks, Asphalt and Road Rakes—Your Inquiry Invited.

RAZOR-BACK

DIAMONDS *for Victory*

Cutter dressing
Closer tolerances
Micrometer Accuracy

Because: W'ng key heat dissipation and absolute diamond lock nib.

● Three grades of diamonds. Common quality $12 per karat. Medium quality $24 per karat. Select quality $48 per karat. (Contour template diamonds supplied only in Medium and Select quality.)

All diamond sizes ¼ to 10 karat are nib mounted for immediate shipment . . . Billed subject to approval. Specify quality of diamond wanted. We recommend a minimum size of one karat for each 6" diameter of grinding wheel. (24 hour resetting service, $1.00 post paid.)

Grinders instruction card free.

The Most Complete and Up-to-the-Minute Line of Diamond Tools for War Production. Send for Free Catalog.

DIAMOND TOOL COMPANY, Not Inc.
Sheldon M. Booth, Pres.
938 E. 41st Street CHICAGO, ILL.

(*Continued from page* 238)

ule A. Water consumers need not be in one of these areas, as long as other restrictions of the order are met.

Industrial and commercial consumers must be engaged in an essential activity as defined in Schedules I and II of CMP Regulation 5. The cost of the extension must not exceed $1500 for underground construction or $500 for other construction.

Schedule B of the order sets up complete construction standards for each type of extension, setting forth the specifications of permitted materials.

The new order does not apply in any case where construction or renovation is involved costing more than $200. In these cases, permission for construction must be obtained under Order L-41 and the utility construction is governed by Order U-1-d. U-1-f covers utility extension where construction or renovation cost under $200, or where none is involved.

PRICE CONTROL ON "SECRET" CONTRACTS

Exemption from price control provided for all sales of commodities or services made under officially classified "secret" contracts or subcontracts with a Government agency ceases to appply upon receipt by the contractor or subcontractor of notification that the contract is no longer secret, the Office of Price Administration announces.

Previously the exemption was automatically lifted upon receipt by OPA of this notification from the certifying Government agency. In some cases there has been a time lag between notification received by the contractor or subcontractor, and notification of OPA.

Amendment No. 1 to Supplemental Order No. 42 (Exception of Sales to Government Agencies Pursuant to Secret Contracts or Subcontracts) effective September 3, 1943, specifies that receipt of notification by the contractor or subcontractor is controlling.

REPAIR PARTS FOR TRUCKS

Truck owners and operators will receive increased help in finding needed repair parts during the coming months through the efforts of the Maintenance Specialists in the 142 district offices of the Office of Defense Transportation, ODT announces.

In addition to spreading the greatly expanded flow of new parts scheduled for production, the Maintenance Specialists have access to the lists of interchangeable parts used in many types of trucks and will undertake to locate needed parts through ODT Maintenance Specialists in other cities, through parts makers and through the cooperation of the War Production Board, as well as through the local channels afforded by the industry-wide membership of local District Maintenance Advisory Committees and sub-committees.

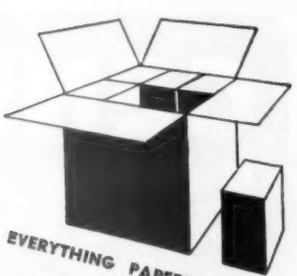
Through the cooperation of members of the local committees over half of the

(*Continued on page* 242)

Here goes a case of tobacco!

DAD still gets his pipeful — even though its peacetime package has gone to war. For versatile paperboard cartons and shipping cases have successfully taken over hundreds of new packaging jobs — releasing metals, rubber, plastics and other critical materials for war use.

Because conversion to paperboard has always been a specialty at Container Corporation, we've had a large share of this work. Our staff are wizards at developing or adapting finishes, coating, linings, designs for particular types of products — and rich in that combination of experience and imagination that produces ideas.



EVERYTHING PAPERBOARD FOR EVERYTHING PACKED

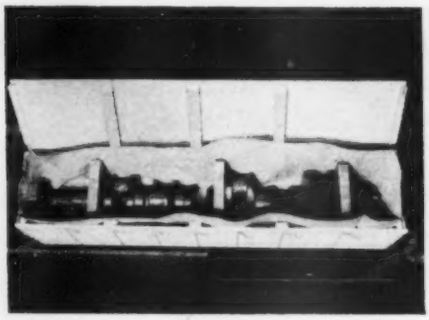
CONTAINER CORPORATION OF AMERICA

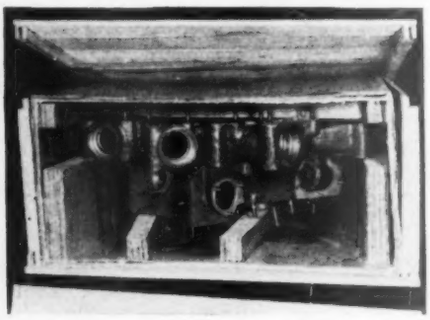
General Offices: 111 W. Washington St., Chicago • New York • Rochester • Natick, Mass. • Philadelphia
Akron • Cincinnati • Cleveland • Circleville • Detroit • Indianapolis • Wabash • Carthage • Anderson, Ind.
Peoria • Rock Island • Minneapolis • Baltimore • St. Louis • Fernandina • Dallas • Ft. Worth

Why more *heavy-duty* General Boxes are reporting *for* overseas service

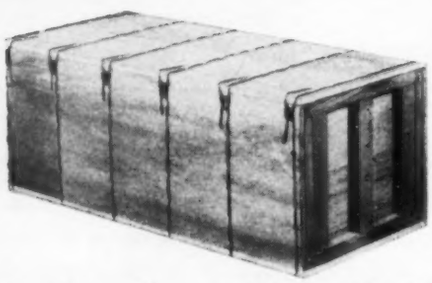
EXPORT shipping problems are simplified when Heavy-Duty General Wirebound Boxes are used. The export type of wirebound containers are called *heavy duty* boxes because they are made of much heavier material than domestic wirebound boxes—yet they are lighter, cost less and occupy less space than the conventional type of export box.

Bound with steel wires, General Heavy-Duty Boxes are built to stand rough sea voyages, rapid loading and unloading, rough handling. These export containers assure protection against crushing or distortion. And General Wirebound Boxes are exceptionally easy to assemble, pack and unpack, can be re-used for other shipments...Today, only war materials can have the benefit of Heavy-Duty advantages—but "tomorrow" many types of export products will be delivered safely, speedily and economically in General Heavy-Duty Wirebound Boxes. Write for information about them now.



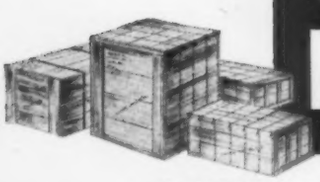


Wartime shipments take a terrific beating—but General Heavy-Duty Boxes bring them through safely. In addition to the tight fit of the box, blocks above and below help keep this crankshaft in position. A waxed-dip and no-oxide cloth act as a rust-corrosion preventive.



Many types of products go overseas in General Heavy-Duty Boxes which are tailored to fit the product. Together with new packing methods, these husky containers provide protection against rough handling and the elements.

Today's lessons in getting war shipments to destination safely will be applied to "tomorrow's" peacetime products. Postwar export shipments will be faster, easier to handle, safer and more economical—thanks to wartime development of General Heavy-Duty Wirebound Boxes.



GENERAL BOX COMPANY

GENERAL OFFICES: 48 West Illinois St., Chicago, Illinois

DISTRICT OFFICES AND PLANTS: Brooklyn, Cincinnati, Detroit, East St. Louis, Kansas City, Louisville, Milwaukee, New Orleans, Sheboygan, Winchendon. Continental Box Company, Inc.: Houston, Dallas.

(*Continued from page* 240)

local parts shortages reported to ODT to date have been relieved locally. Through the 142 ODT District Maintenance Specialists, the local search is put on a nation-wide basis.

ODT pointed out that although materials assigned to parts manufacture have been greatly increased, there is still a big problem in getting particular parts to the areas where they are most needed. It is in locating needed parts in other areas where they may be available that the local Maintenance Specialist can be of real help.

To prevent avoidable lay-up of trucks, operators unable to find needed parts are urged not to delay getting in touch with their local Maintenance Specialist at the nearest district office of the Office of Defense Transportation.

✓ ✓ ✓

DEFINES AGENT UNDER REVISED PRICE SCHEDULE NO. 7

A strict definition of when a person is acting as an agent of a war procurement agency under the terms of Revised Price Schedule 7, Combed Cotton Yarns and the Processing Thereof, has been issued by the Office of Price Administration to eliminate any misunderstanding.

A paragraph and footnote on the subject are added to the Schedule by Amendment 12, which became effective September 1, 1943.

The question is important because of the existence of two scales of ceiling prices in the Schedule for 50s and coarser counts of combed cotton yarns: the higher of the scales being applicable only to sales to the War and Navy Departments. Maritime Commission, and Lend-Lease, or to their designated agents.

About 6 per cent higher than ceilings for ordinary sales of the yarns, the ceilings for sales to the war procurement agencies or their agents were established to help the Government obtain enough combed twill, combed wind-resistant poplin and similar material to meet its requirements.

Some sellers evidently believed that the higher scale of prices could be charged on sales to other Government procurement agencies than those named in the Schedule, and to subcontractors under them. They also believed the higher scale could be charged even those who merely held contracts carrying priority ratings.

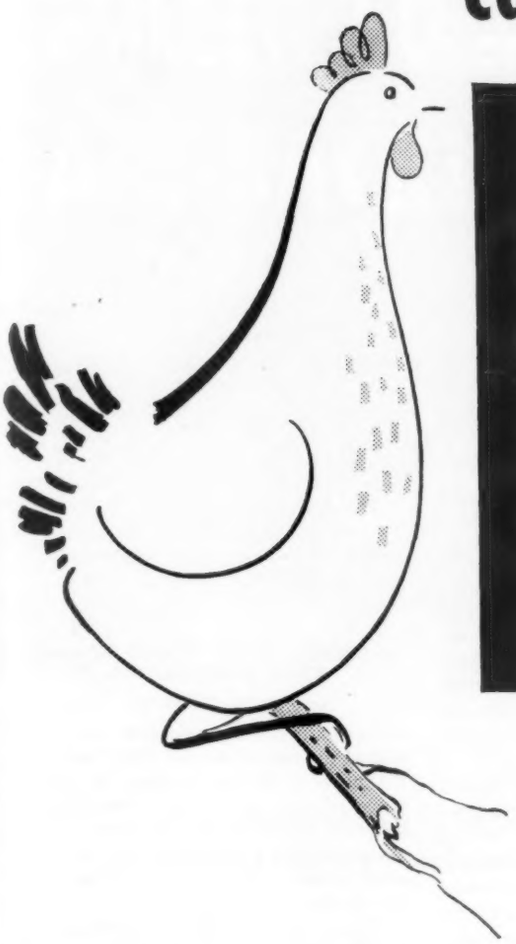
OPA earlier issued a statement intended to end such misunderstanding, but has found it necessary to follow that up with another amendment.

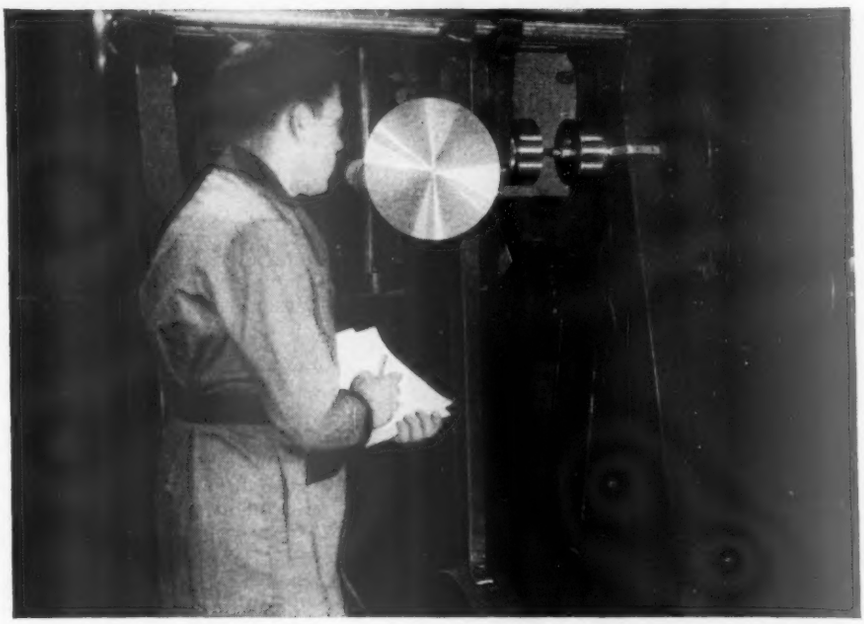
The amendment states precisely: "a person is acting as an agent of a war procurement agency to purchase yarns at the maximum prices appearing in Column B (the higher scale) only if his authority is conferred by or derived from an agency designation issued by a war procurement agency especially for that purpose."

A footnote to the same section states: "War procurement agencies are using

(*Continued on page* 244)

No "chicken-necked" SOCKET SCREW can survive this Twist...





Brutal overloads applied in Torque Test make sure P-K Socket Screws will more than meet setting-up stresses . . .

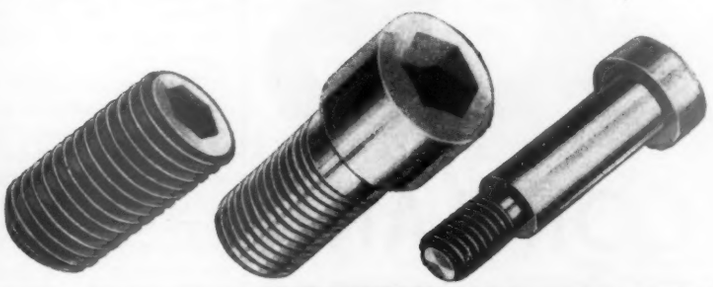
To make sure you get no "chicken-necks" among Parker-Kalon Socket Screws, thorough tests are made in the P-K Laboratory with this steel-muscled twister that develops torsional stresses far beyond normal. For example, a P-K ½"-20 (N.F.) Cap Screw must withstand a 2200 inch-pound minimum load. These tests make sure that any P-K Socket Screw can be set up as tight as required without danger of the head twisting off.

The torque test is only one of 16 check-ups made to assure the unfailing performance of P-K Cold-forged Socket Screws. This rigid routine of *quality control* eliminates the "doubtful Screws" – screws that *look* all right, but some of which fail to *work right.* Socket Screw users need this protection today more than ever. Specify "Parker-Kalon" next time you order . . . it costs no more. Parker-Kalon Corp., 202-204 Varick St., New York 14.

This 16-point "Quality-Control" protects P-K Socket Screw Users

1–Chemical Analysis. 2–Tensile Strength. 3–Ductility. 4–Torsional Strength. 5–Ability to take Shock Loads under Tension. 6–Resistance to Shock Loads under Shear. 7–Hardness. In addition, there is a rigid inspection of these essentials: 8–Head Diameter. 9–Head Height. 10–Concentricity of Head to Body. 11–Socket Shape. 12–Socket Size. 13–Socket Depth. 14–Centricality of Socket. 15–Class 3 Fit Threads. 16–Clean Starting Threads.

PARKER-KALON
Quality-Controlled
SOCKET SCREWS



Kissing—

or Kicking!

Cortland Grinding Wheels, in the hands of skillful operators, will kiss a flaw as smooth as silk, or kick off the scale in jig time!

We will gladly send information for your files.

CORTLAND GRINDING WHEELS CORP.

Chester, Massachusetts

9-P

CORTLAND

For Better Snagging

PRIORITIES REGULATION 3 AMENDED

Blanket PR'S for MRO May be Applied for Repair of Plant Machinery and Equipment — Other changes

Blanket MRO ratings are assigned by MRO purposes may be applied by persons eligible to use them for the repair of plant machinery and equipment, even if the repair job does not involve delivery of repair parts or materials, the War Production Board ruled through issuance of Priorities Regulation 3, as amended recently.

Blanket reference ratings assigned for CMP Regulations 5 and 5A, certain orders in the "P" series, and certain other WPB orders and regulations and on forms and certificates where the kind and quantity of this material to which the rating may be applied is not specified. In any case where the quantity of material is specified in terms of dollar value only the preference rating is a blanket MRO rating.

Ratings assigned on PD-1A, and PD-3A certificates and other ratings assigned to the delivery of specific repair parts or materials may also be applied to installation of the parts of materials or to the repair job alone if it is found that installing the parts and materials is not necessary. However, in the case of ordinary plumbing, heating, electrical, automotive, or refrigeration repairs, a rating may not be applied to repair work even if it is expressly applicable to repair parts or materials.

For the purpose of this part of the order, repair means to fix a plant, machinery, or equipment after it has broken down or when it is about to break down. It does not include upkeep or maintenance service such as periodic inspection, cleaning, painting, lubricating and other services.

Ratings for repairs, as distinct from delivery of repair parts or materials, may be applied only to persons regularly engaged in the business of making such repairs with their own tools and equipment.

Persons who have received a preference rating for the use of facilities only or for a repair job only, where no delivery of materials is involved, may not extend the rating for any purpose.

The regulation also provides that blanket MRO ratings may not be applied to get any item included in List B of the regulation. Suppliers are prohibited from giving any effect to ratings applied to deliveries of any item on List B if they know or have reason to believe that it is a blanket MRO rating. Ratings which are not blanket ratings may, however, be used to obtain List B items.

The item on List B which covers laboratory instruments and equipment has been amended to permit the use of ratings assigned pursuant to Orders P-56, P-58, and P-73, relative to the mining industry.

At the same time, preference ratings assigned for maintenance, repair and operating supplies may be used to obtain fire hydrants, as a result of the amendment which deletes such hydrants from list B. The amendment also deletes List C from the regulation.

However, the use of preference ratings for the items which were on List C is still restricted by certain orders—for instance, textile items subject to M-328 and the container items subject to P-140.

AIMED AT STABILIZING TIMBER AND LUMBER PRICES

Establishment of maximum prices for sales of all standing timber in the Western States west of the Great Plains—an action designed to restrain rising timber prices and further stabilize present ceilings for logs, lumber and other forest products—is announced by the Office of Price Administration.

Ceiling prices are provided for all timber—both publicly and privately owned.

The new ceilings are established in Maximum Price Regulation No. 460 (Western Timber), and become effective August 31, 1943.

DEFINES AGENT UNDER REVISED PRICE SCHEDULE NO. 7

(*Continued from page* 242)

specially devised procedures for designation of purchasers as their agents for the purpose of this section. In the absence of any such specific designation a seller is not permitted to charge and a a buyer is not permitted to pay the maximum prices appearing in Column B of this section.

"The mere fact that a purchaser has a contract covering goods to be furnished to a war procurement agency and/or a contract carrying a preference rating does not constitute him an agent (as the term is used herein) of a war procurement agency."

OPA said that both the Army Quartermaster Corps and the Navy Bureau of Supplies and Accounts have issued written forms for use in making the necessary agency designation.

EXEMPT FROM FEDERAL TRANSPORTATION TAX

The 3 per cent Federal transportation tax does not apply to amounts paid by private motor carriers for adjustment of costs under certain joint action conservation plans according to the Office of Defense Transportation.

Under the Revenue Act of 1942, a federal tax of 3 per cent is levied upon the amounts paid for transportation of property by rail, motor vehicle, water or air.

Where each private participating motor carrier operates his own equipment with his own personnel and merely pools merchandise with other private carriers for transportation and delivery services within a certain area the tax does not

(*Continued on page* 246)

MILLER 50 and 100 Foot Candlers ARE BACK!

. . . a real continuous fluorescent lighting system now available to war industry!

WAR INDUSTRY INSISTED they needed the vital benefits of MILLER 50 FOOT CANDLER and 100 FOOT CANDLER for better, faster, safer production. WPB agreed, but in the same breath asked us to help conserve war-precious metal. The problem—how could we serve them both?

MILLER ENGINEERING LICKED THE EMERGENCY

Yes, the same men who pioneered continuous-row fluorescent went back to their boards . . . surveyed the situation . . . and actually designed an *improved* 50 and 100 FOOT CANDLER.

They eliminated the use of considerable metal—*yet produced a sturdy, substantial lighting fixture.* They went over to building's proven material, Masonite—*for lightweight but extremely durable reflectors.* They redesigned the reflectors—*yet did not sacrifice lighting efficiency.* They simplified construction features—*so starters could be conveniently located between lamps—so ballasts could be exposed for cooler operation.*

AND — in addition to providing it in single unit 4-foot and 5-foot lengths—*it is available in double lengths, 8-foot and 10-foot.* It is the strength and rigidity of these double lengths that again make possible *real continuous-row fluorescent lighting* with its savings in installation cost.

These are the highlights. There's a lot more to the story—*important to you right now.* Better write for full information.

QUICK FACTS FOR FAST READERS

IMPROVED DESIGN of the MILLER continuous fluorescent lighting system, introduced in 1939.

RUGGED LIGHTWEIGHT EQUIPMENT — with sturdy, Masonite reflectors—and no reduction in lighting efficiency.

EXPOSED BALLASTS — for cooler operation — with starters conveniently located between lamps.

HIGHER ILLUMINATION — 30, 40, 50 or *more* foot candles. Units available in 4-foot and 8-foot lengths for 40-watt lamps — in 5-foot and 10-foot lengths for 100-watt lamps.

INSTALLATION SAVINGS from 30% to 50% possible through the use of rigid double length units in a continuous-row lighting system.

SIMPLIFIED MAINTENANCE — reflectors are so easy to handle and remove that women workers can take care of them.

SAFETY "PLUS" — the MILLER patented Safety Lamp Lock is available as an integral part of each socket, minimizing the danger of falling lamps.

THE MILLER COMPANY • MERIDEN, CONNECTICUT

ILLUMINATING DIVISION
Fluorescent, Incandescent
Mercury Lighting Equipment

OIL GOODS DIVISION
Domestic Oil Burners
and Liquid Fuel Devices

ROLLING MILL DIVISION
Phosphor Bronze and Brass
in Sheets, Strips and Rolls

WAR CONTRACTS DIVISION
War Materiel

MILLER
SINCE 1844

Vision for Victory

PRECISION MILITARY OPTICS
BY

AWARDED TO PLANT 2
OPTICAL DIVISION

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INTERNATIONAL INDUSTRIES, INC.

ANN ARBOR MICHIGAN

FINE AMERICAN CAMERAS
•
PRECISION OPTICAL INSTRUMENTS
•
AVIATION RADIO EQUIPMENT
•
BUY WAR BONDS

Hodell CHAINS
WELDLESS and WELDED

157 VARIETIES!

Hodell, in war as in peace, is a specialist in producing chain assemblies with or without attachments—assemblies that cover the widest range of sizes and uses. If your wartime production presents chain problems, let Hodell engineers help you. Send blueprints for estimate.

ESTABLISHED 1886
THE HODELL CHAIN CO.
CLEVELAND, OHIO

ARMSTRONG-BRAY
Gear & Wheel Pullers

Prompt Shipment from Stock
— Essential Tools Today

because they save hours of time, prevent costly breakage and long shut downs.

STEELGRIP Standard Rigid Arm Gear and Wheel Pullers are of improved design. Will not slip from work. Arms are forged and heat-treated. 2-arm, 3-arm and special models. 12 types and sizes.

CHAINGRIP Universal Pullers pull wheels, solid gears, pinions, etc., even at considerable distance from end of shaft. Proof-tested chains have both chain hooks and special pulley hooks. 3-ton and 12-ton capacities.

Write for Catalog Sheets.

ARMSTRONG-BRAY & CO.
"The Belt Lacing People"
5378 Northwest Highway, Chicago, U. S. A

(*Continued from page* 144)

apply, the Bureau of Internal Revenue stated in a ruling to the ODT.

It does not matter whether the carriers are operating in local or over-the-road service, or both, the Bureau has informed the ODT.

Under these conditions, the amounts paid by one private carrier to another for the purpose of adjusting the cost of transportation and delivery of merchandise is not subject to the tax.

In such instances the parties to the joint action are not considered by the Bureau of Internal Revenue to be in the business of transporting property for hire within the meaning of the Act.

ALLOTMENTS FOR CLASS A PRODUCTS MANUFACTURERS

Manufacturers of Class A products have the right to ask for allotments from their customers for the quarter in which the allotments are needed to obtain delivery of controlled materials, the War Production Board has ruled in issuing Direction No. 27 to CMP Regulation No. 1.

If the manufacturer is asking for an allotment to replace inventory of controlled materials which he will use in the manufacture of the Class A product, he may ask for it in the quarter for which the order is placed or for any of the next three quarters. Manufacturers do not have to accept orders for such products, unless their requests for allotments, within the specified time limits, are complied with.

Manufacturers, however, must not ask for allotments for quarters in which they cannot accept delivery of controlled materials because of inventory limitations.

Interpretation No. 11 to CMP Regulation No. 1 indicates that a manufacturer of Class A products must fill orders out of excess stocks if the size of his inventory prohibits acceptance of delivery of controlled materials. Nevertheless a manufacturers may insist on an allotment before accepting an order for a Class A product, if the quarter for which he is seeking the allotment is within the time limit permitted by Direction No. 27.

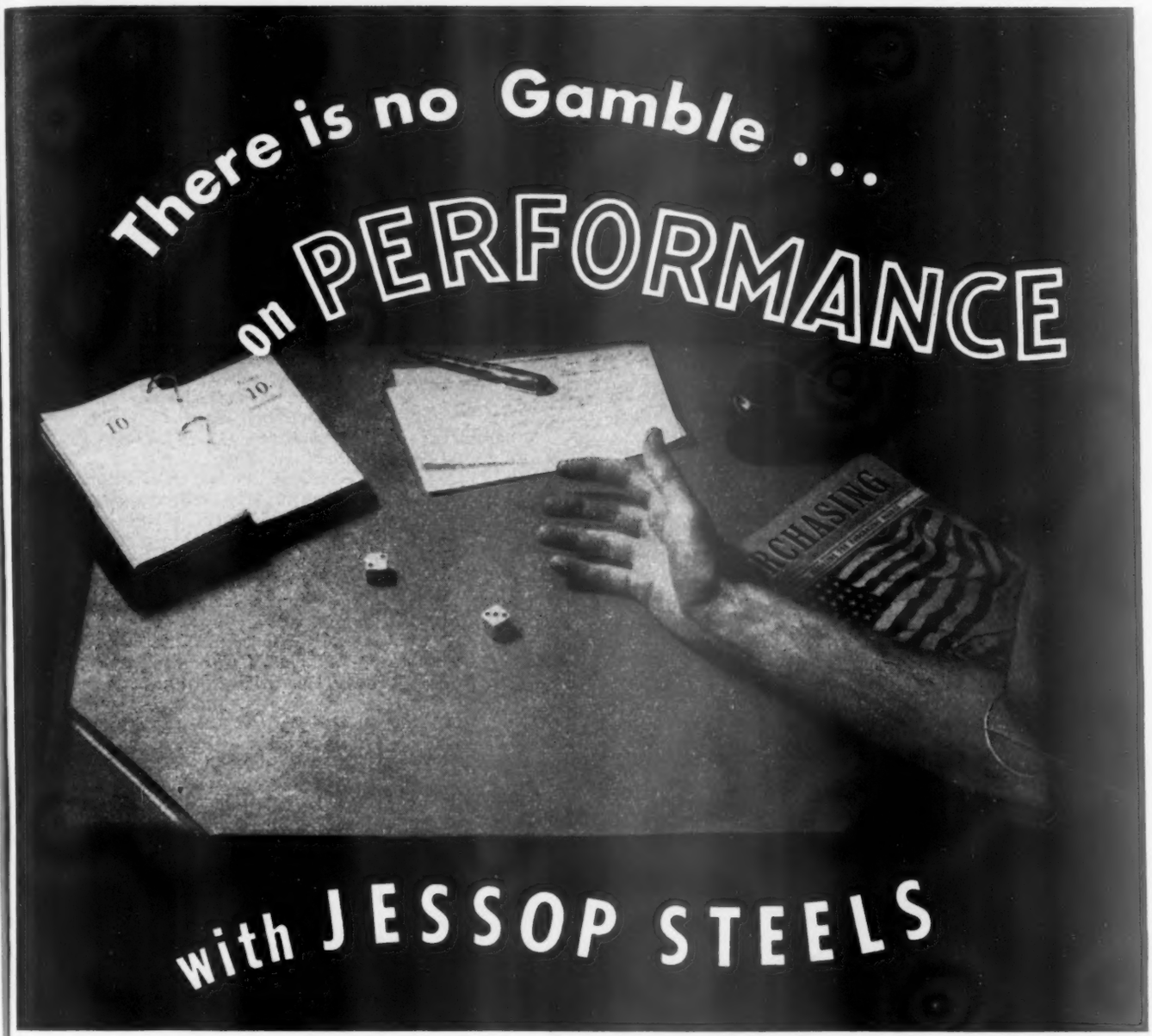
USED STEEL SHIPPING DRUMS RESTRICTED

Used steel shipping drums which are suitable for reuse for packing either edible products or naval stores products, may not be used for any other purpose but are restricted to the uses of those industries, according to Amendment No. 1 to Limitation Order L-197, the War Production Board announces.

Exemptions relating to steel drums used for shipments licensed by the Office of Economic Warfare have been restricted to apply only to those drums actually used for exports to points outside Continental United States, the WPB Containers Division explained.

While the use of new steel drums for packing turpentine is still prohibited under the order, used drums may be em-

(*Continued on page* 248)



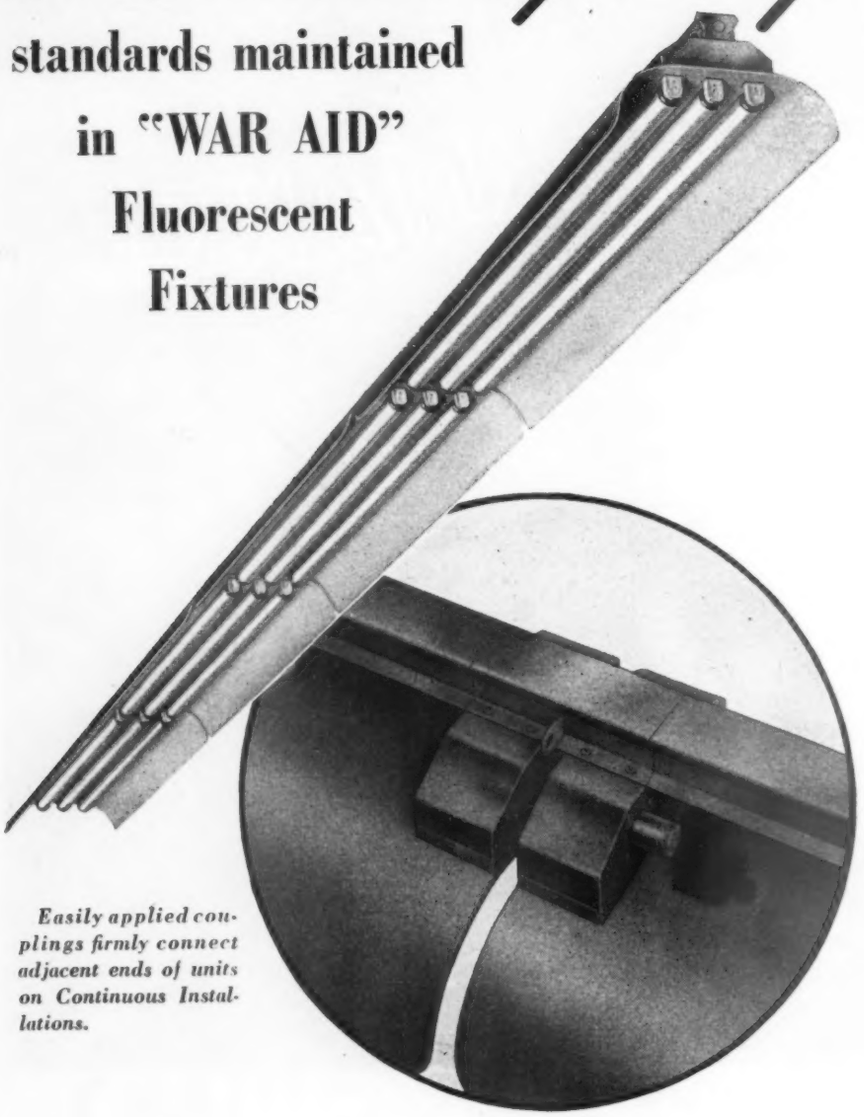
★ **Jessop Quality Tool and Die Steels are the products of modern melting and rolling facilities and practices, combined with 42 years of steel-making experience. There is a Jessop Steel available for every conceivable application—they are produced in bars, sheets, plates, blocks, forgings, and special shapes. Warehouse stocks are maintained in the principal cities. Write for information on Jessop Steels for your particular application.**

JESSOP STEEL COMPANY

HEAD OFFICE AND WORKS: **WASHINGTON, PENNA.**

"Skilled" Lighting

standards maintained in "WAR AID" Fluorescent Fixtures



Easily applied couplings firmly connect adjacent ends of units on Continuous Installations.

Wheeler "War-Aid" Fluorescent fixtures are constructed for use with 2 or 3 40-watt lamps, and 2 100-watt lamps. Units are available for Individual or Continuous Installations.

Fixtures have a sturdy metal-conserving wiring channel, non-metallic reflector with chip-proof, washable surfaces. Minimum overall efficiency of 80% for 48" 2 lamp units, 76% for 3 lamp units, and 74% for 60" 2 lamp units.

Units are supplied with loops for chain suspension and with knockout for conduit mounting. In addition, Wheeler "C-Clamp" Sliding Hangers are available which permit fixtures to be mounted from rods, conduit, close to ceiling, or by messenger cable.

Whether you require fluorescent or incandescent illumination, Wheeler can supply Skilled Lighting for precision production. Write for catalogs of both types. Wheeler Reflector Company, 275 Congress Street, Boston 10, Mass. . . New York. Representatives in principal cities.

Distributed Exclusively Through Electrical Wholesalers

Wheeler REFLECTOR COMPANY

Lighting Equipment Specialists Since 1881

(*Continued from page* 246)

ployed for that purpose under the amendment.

A definition of naval stores products was effected to clarify that term, now designated as meaning materials derived directly from the oleo-resinous secretions of various species of coniferous trees, including resins and liquid terpens, both crude and refined, special materials derived from these, and such related products as tall oil and pine tars.

REDUCE VISE TYPES AND SIZES COPPER JAW CAPS ELIMINATED

Types and sizes of vises are reduced from approximately 165, formerly manufactured, to approximately 40 types and sizes through issuance of Schedule VI to Limitation Order L-216 by the War Production Board.

Through elimination of an unnecessary variety of vises, conservation of a considerable quantity of carbon steel and alloy steel annually is expected, the Tools Division of WPB said. The new schedule provides for elimination of heavier types of vises, a reduction in the number of intermediate sizes and curtailment of types for so-called special uses.

Schedule VI also eliminates copper jaw caps by providing that no person shall perform any manufacturing operations upon or sell any jaw caps for vises made of any metal other than lead or lead base alloy. This provision will conserve an appreciable quantity of copper annually. Exception is made for jaw caps or vises completely or substantially fabricated before September 7, 1943.

The new schedule is expected to increase production of vises approximately 20 per cent by eliminating slow-moving types and sizes, reducing production time through fewer change-overs, and speeding the flow of materials through tool plants.

Types of vises which may be manufactured without restriction are listed in Table I of Schedule VI as pipe vises (chain, hinged or open jaw and open size); riggers' (splicing) vises; patternmakers' vises; saw vises; machine vises for mounting on drill presses, milling machines, etc.; tools commonly called vises (such as hinged jaw, hand, pin and lineman's vises) which do not have the characteristics of a bench-mounted vise.

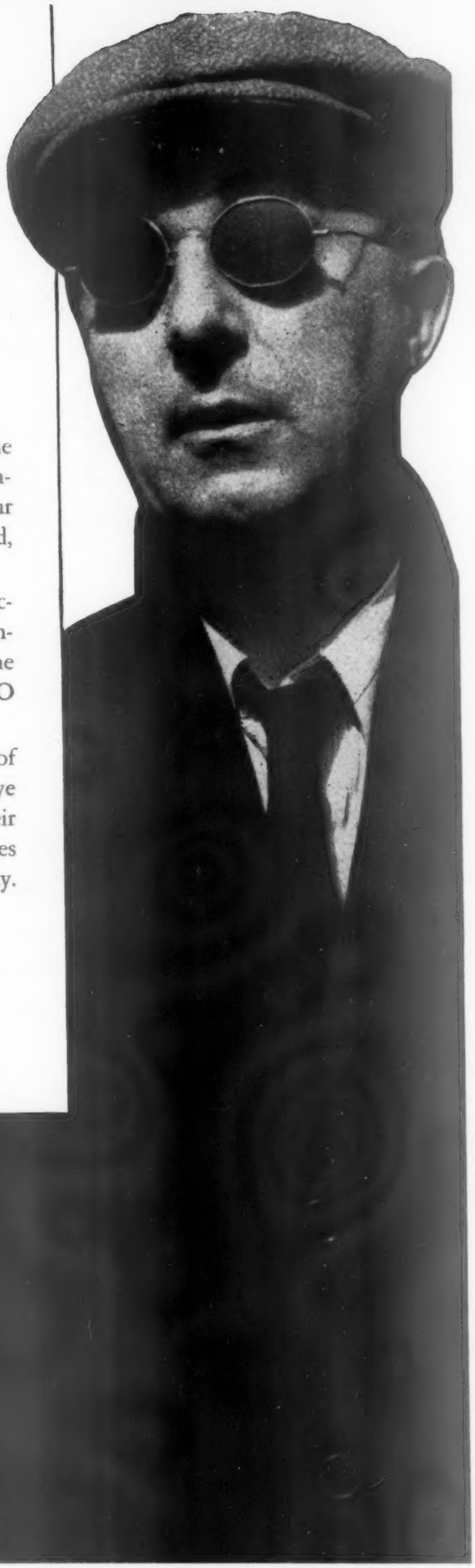
Types of vises which may be manufactured only in the weights and jaw sizes specified are given in Table II of Schedule VI.

SOFTWOOD PLYWOOD WAREHOUSE REPLACEMENTS

Applications for authorization of purchase orders of softwood plywood manufactured in Washington, Oregon and California are now made by the users of this plywood or by distributors when purchases are for warehouse replacement. Applications were formerly made by prospective purchasers. This change is effected by an amended version of Limitation Order L-150 issued by the War

(*Continued on page* 252)

He *used to be* an Expert Die Maker



PROTECT YOUR WORKERS' SKILL WITH AO SAFETY GOGGLES

Not so long ago, this man was a die maker by trade. Now he is a pencil peddler by accident. Let his case remind you that unless there is a properly planned eye protection program in your plant, industrial eye accidents can rob *you, too,* of highly skilled, *irreplaceable* workers.

Let this blind man remind you, also, of the *high costs* of eye accidents . . . in medical and hospital expenses, lost time, lost manpower, lost production, idle machines, spoiled materials. Even the most minor case of "Lost-Time Eyes" costs far more than the AO Goggles that would have prevented it.

American Optical Company offers you a complete line of scientifically designed, comfortable goggles for every type of eye hazard. Trained AO Safety Representatives give freely of their time and experience to help your Safety Director safeguard eyes and dollars. Get in touch with your nearest AO Branch Office today.

American Optical
COMPANY
SOUTHBRIDGE, MASSACHUSETTS

Manufacturers for 110 Years of Products to Aid and Protect Vision. Branches in All Principal Industrial Centers

BROTHER, WE CAN'T FEED THE WORLD BY HAND

Only machines can keep U. S. agriculture doing the job!

WITH THE FOOD PROBLEM more serious than ever, U. S. farmers are being obliged to produce food for us and our armies and our allies with equipment that, in an estimated 98% of the cases, was in service a year ago, two years ago, *many* years ago!

An intelligent and conscientious maintenance and repair program is now in effect — but it is strictly limited by the amount of maintenance and repair supplies available. These, in turn, depend upon the amount of steel that can be sacrificed from the building of the more direct weapons of war.

Empire Bolts and Nuts are needed in building ships, planes, guns, tanks . . . but they are needed, too, by the men responsible for producing more food with less help — the manufacturers of new farm machinery and the farmers who must use bolts and nuts to repair their old machinery. To both we pledge our sincerest efforts, inspired by the realization that food is ammunition and that the EMPIRE BOLTS and NUTS made for plows and tractors and reapers are equally important, in our plan for victory, to the fasteners we are making for the weapons of war. Russell, Burdsall & Ward Bolt and Nut Company, Port Chester, New York.

RB&W *Making strong the things that make America strong*

RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY

HOW ABOUT A POSY FOR THOSE BEHIND THE SCENES?

THE MAGNIFICENT performance of the star rates the plaudits of the audience. But shouldn't there be spared from the star's bouquet a flower for those behind the scenes whose efforts have helped to make the performance such a triumph?

America's gigantic war effort is the most spectacular production of all time. Its drama is breathtaking. Its cast of characters huge. Some of the actors must remain in the background . . . but their performance is none the less essential.

We here at Joyce have been destined to play that kind of role. You won't find our name in the headlines. We'll be unmentioned in thrilling stories of naval and military victories. But we're gratified to know that we've been able to help bring about those victories. For the products of Joyce artisans can be found in battle on land and sea, in the air and under the sea—indispensable parts of our fighting forces' weapons and equipment—parts whose dependability and precision functioning are vital.

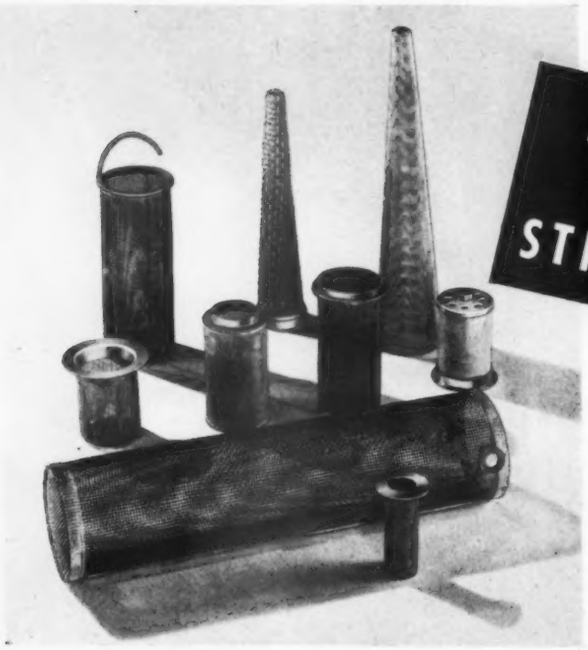
Joyce is proud of the justly deserved honors awarded American Industry, for the parts, assemblies and machines built by Joyce engineers and craftsmen are helping many of the nation's greatest war-production plants to attain and maintain new production records.

If you find it difficult to meet your war contracts, let Joyce's specialized production skill show you the way. And, when Victory comes, that same Joyce "know how" will be immediately available to assist you in licking postwar production problems. A Joyce representativ will be glad to call and explain the unique advantages we are equipped to offer.

★ *More Bonds over here mean more Bombs over there* ★

BEHIND THE MAN ▸ BEHIND THE MAN ▸ BEHIND THE GUN

JOYCE
Machine Company
WHEATSHEAF LANE • PHILADELPHIA
★
MANUFACTURERS OF PRECISION PARTS
FOR ALL KEY INDUSTRIES



JELLIFF FUEL STRAINERS

IF YOU WANT quality strainers on time, at a fair price, WRITE US NOW.

Jelliff has all the facilities for making fuel strainers. Wire drawing, weaving, and fabricating all in one plant — each step carefully watched by an inspector trained for that particular job. Rigid adherence to specifications and tolerances is guaranteed; AND SHIPPING SCHEDULES ARE MAINTAINED.

The C. O. JELLIFF MFG. CORP.
22 PEQUOT AVENUE · SOUTHPORT, CONN.

Screws

Our catalog is no colorful picture book—but it is easy to use and easy to find things in. It was devised for the superintendent, the master mechanic and the purchasing agent.

It is a catalog of standard and special screws — wood or metal — stripped right down to facts and specifications. If you haven't a copy, please send for it now.

MACHINE SCREWS
SHEET METAL SCREWS
MACHINE SCREW NUTS
PLASTIC INSETS
HOLDING PINS
SPECIAL RIVETS
All types of heads and threads

NEW ENGLAND SCREW CO.
KEENE, NEW HAMPSHIRE
INCORPORATED 1892

—on all Cleaning Jobs
• FAST
• EFFICIENT
• ECONOMICAL

PERMAG
Cleaning Compounds

- Slow acting compounds are wasteful, impractical, useless. PERMAG Compounds have an enviable record for speed; specially suited for today's requirements in war industries.
- Jobs cleaned with PERMAG Compounds *do not have to be done over again.* PERMAG Compounds are thorough, powerful, effective to the nth. degree.
- PERMAG Compounds are safe, easy to use, help step up production and have proved to keep cleaning costs low.

Write us about your cleaning problems.

MAGNUSON
PRODUCTS CORPORATION
50 Court St., Brooklyn, N. Y.
Nationally Represented
Warehouses in chief cities.
CANADA:
Canadian Permag Production
Montreal and Toronto.

(*Continued from page* 248)

Production Board. The amended order also requires five instead of four copies of applications (Form WPB 2532) and four instead of three copies of monthly schedules filed by producers (Form WPB 2531).

NEW RESTRICTIONS ON PAPERBOARD FOLDING & SET-UP BOXES

The War Production Board has imposed new restrictions on paperboard folding and set-up boxes, particularly those used to pack cereals, candy, hosiery and knitted wear, to save 21,000 tons of paper and paperboard during the next year. Limitation Order L-239, as amended September 10, also provides for an inventory restriction of 90 days' supply of folding and set-boxes for users but permits a 25 ton allowance for small uses and users.

Existing restrictions on the use of inside pulp liners were revised and clarified. These materials may now be used only in boxes for packaging wet or oily foods or products containing 25 per cent or more of metal. Necessary use in boxes for other products may be authorized by WPB upon application.

To save a substantial quantity of paperboard, the WPB order now prohibits the manufacture of individual size cereal packages to be used, singly or in multiple assortments, for retail trade after September 10, 1943. The restriction will affect retail stores only and will aggregate about three or four thousand tons of paperboard per year. About 75 per cent of the production of these packages is for military and restaurant use. Those uses are not affected by the amendment.

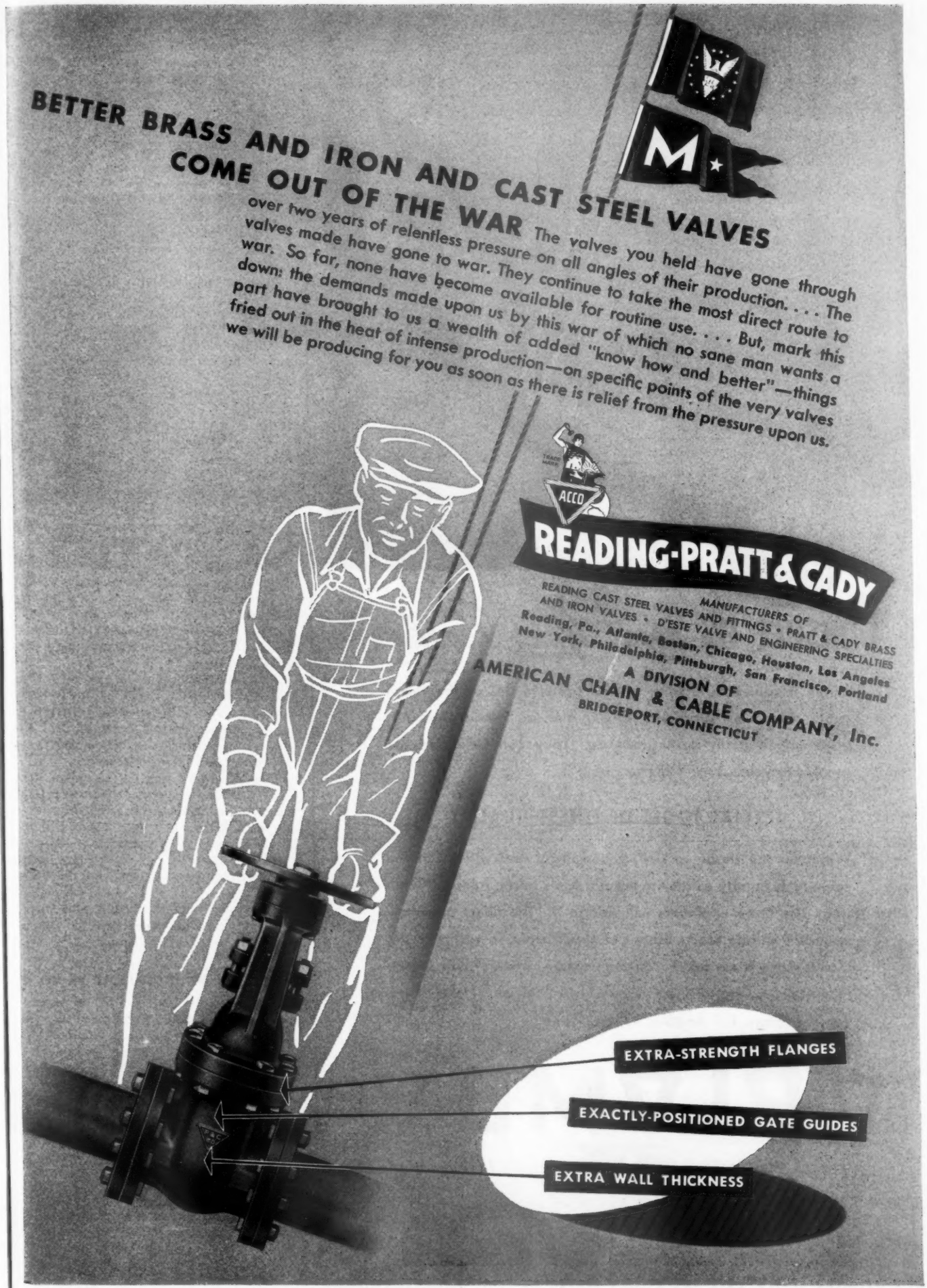
All classes of paperboard jewelry boxes are now included in the retail box schedule which formerly did not include boxes for custom jewelry.

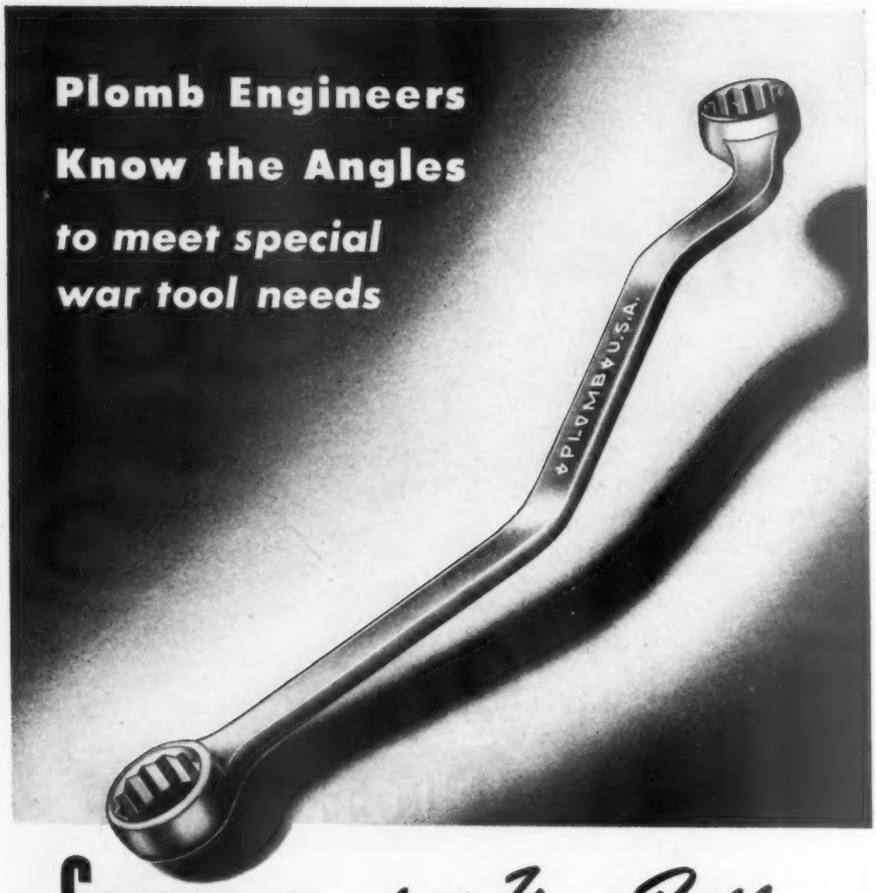
Candy boxes are limited by the amount of paperboard which may be used. There will be no less boxes, and box styles may generally be preserved, but they will have to be made of lighter weight paperboard, based on a sliding scale, varying with the size of the box. By this restriction about 5,000 tons of paperboard a year may be saved. Candy boxes affected are set-up styles in sizes from ½ to 5 lbs. The maximum permitted finished box weights range from 4 ounces to 18 ounces, subject to a 5 per cent tolerance. Board saving limitations are also placed on outer containers for candy boxes. Only multiple containers are allowed for candy boxes of less than 3 pounds.

Restrictions are also placed on the manufacture and packaging of boxes for knitwear, including hosiery and knitted underwear and outerwear. The use of lined boxboard is not permitted in boxes for knitwear, except in boxes for certain grades of women's rayon hose, and the minimum number of articles packed in a single container is in general increased. Approximately 12,000 tons of paper and paperboard a year is expected to be saved by this means.

Heretofore rubber heel boxes smaller than those intended to contain six pair

(*Continued on page* 254)


BETTER BRASS AND IRON AND CAST STEEL VALVES
COME OUT OF THE WAR
The valves you held have gone through over two years of relentless pressure on all angles of their production. . . . The valves made have gone to war. They continue to take the most direct route to war. So far, none have become available for routine use. . . . But, mark this down: the demands made upon us by this war of which no sane man wants a part have brought to us a wealth of added "know how and better"—things fried out in the heat of intense production—on specific points of the very valves we will be producing for you as soon as there is relief from the pressure upon us.
ACCO
READING-PRATT & CADY
MANUFACTURERS OF
READING CAST STEEL VALVES AND FITTINGS • PRATT & CADY BRASS AND IRON VALVES • D'ESTE VALVE AND ENGINEERING SPECIALTIES
Reading, Pa., Atlanta, Boston, Chicago, Houston, Los Angeles New York, Philadelphia, Pittsburgh, San Francisco, Portland
A DIVISION OF
AMERICAN CHAIN & CABLE COMPANY, Inc.
BRIDGEPORT, CONNECTICUT
EXTRA-STRENGTH FLANGES
EXACTLY-POSITIONED GATE GUIDES
EXTRA WALL THICKNESS



CONSULT US *about Your Problem*

When it comes to making special tools to get at the tough spots, there's no substitute for experience. Plomb engineers have solved many such problems. They can help find the answer to yours, too. Write us about it.

SPECIAL TOOLS OF FINEST QUALITY

Whatever the shape or size, your special tool will be of the same high quality as all the regular tools in the famous Plomb line. The same engineers will design it. The finest available materials will be used. Every detail will make it worthy of the Plomb name it carries. For prompt action, write or call today.

Plomb Tools Contracting Company—A Division of the Plomb Tool Company, Los Angeles 11, California.

PLOMB

FOR REGULAR TOOLS, CALL THE PLOMB DEALER IN YOUR NEIGHBORHOOD

(*Continued from page* 252)

were prohibited, but provision is now made for boxes to package single pairs of heels. Such boxes, however, are limited as to quality and thickness of boxboard.

QMC WILL ACCEPT V-2 BOXES FOR CERTAIN PRODUCTS

The United States Army Quartermaster Corps has notified the Containers Division of the War Production Board that it will accept V-2 boxes in the packaging of certain products where V-1 boxes previously were specified. The V-2 boxes take substantially less virgin pulp, thus spreading the available supply of this material.

Items for which the Quartermaster Corps has indicated acceptance of V-2 boxes include canned fruits and vegetables, canned milk, canned fish and jams, jellies and preserves.

Where practical, all producers and processors who have orders for shipment of these items in V-1 boxes are urged by WPB to change over to packaging in V-2 boxes.

All Quartermaster depots have been advised of the changes in specifications.

ASSISTANCE ON PROCURING TRUCK TIRES

Eligible truck operators who hold tire rationing certificates but who are unable to locate within their county the proper tires may apply to their nearest Motor Transport District Office of the Office of Defense Transportation for assistance, the ODT announces.

This information will in turn be transmitted daily to the Office of the Rubber Director, who will endeavor to arrange for the proper redistribution of tires so that all the certificates can be honored as quickly as possible after issuance.

This procedure was decided upon, the ODT stated, after some truck operators reported they were unable to obtain critically needed tires and as a result had to keep vehicles out of operation.

In some cases, it was reported, important war freight was delayed for this reason.

It is hoped that the new arrangement will help essential operators to obtain prompt relief, the ODT stated.

PREFERENCE RATINGS UNDER PR NO. 3

Limitations on the use of preference ratings, spelled out in Section (f) of Priorities Regulation No. 3, relate only to the items referred to in that section, specifically those appearing in Lists A and B of the Regulation, the War Production Board points out.

According to Interpretation No. 5 to Priorities Regulation No. 3, when any other order of WPB restricts delivery of a product in any way, the restrictions are applicable, even though the item is not specifically listed in Priorities Regulation No. 3. This Interpretation makes clear that restrictions in WPB orders which are applicable to items which were in-

(*Continued on page* 256)

KEEP *UP-TO-DATE* ON YOUR STEEL "SPECS"!

If you work with steel—designing, fabricating or purchasing — keeping posted on Government "specs" can save you plenty of grief. May sound elementary, but recent Frasse experiences indicate otherwise.

Take, for example, the instrument maker who recently received from another supplier stainless steel ordered to a Navy "spec". The steel did not meet his requirements, and, suspecting an off-analysis, he called upon Frasse for confirmation. Frasse, knowing the "spec" had been revised 3 times in two years, found the supplier had automatically (and correctly) furnished steel to the latest revision—an unusual analysis for special application only. Result: a ton of critical stainless steel sidetracked from the war effort, plus additional delay until the correct analysis could be obtained.

Frasse subsequently spent a day with the manufacturer's purchasing director, designers, and metallurgists, compiling "spec" conversion charts and revising prints. "Spec" checking with Frasse is now a regular process with this war contractor.

Frasse, incidentally, regularly issues identification charts showing up-to-date Government specifications for alloy, stainless and carbon steels—copies are obtainable free from any Frasse office. Meanwhile, why not (1) always mention the effective date of the specification to which you order, (2) keep posted by regularly checking your purchasing records and blueprints with Frasse. *Peter A. Frasse and Co., Inc., Grand Street at Sixth Avenue, New York 13, N. Y. (Walker 5-2200) • 3911 Wissahickon Ave., Philadelphia 29, Pa. (Radcliff 7100-Park 5541) • 50 Exchange Street, Buffalo 3, N. Y. (Washington 2000) • Jersey City, Hartford, Rochester, Syracuse.*

Frasse

Mechanical and Aircraft STEELS

SEAMLESS MECHANICAL AND AIRCRAFT TUBING • COLD FINISHED BARS • ALLOY STEELS • AIRCRAFT STEELS
STAINLESS STEELS AND TUBING • DRILL ROD • COLD ROLLED STRIP AND SHEETS • WELDED STEEL TUBING

LAMINUM shims make it easier to keep your factory production machine or field service machine at top form.

Shims cut to your specifications. Stock shim materials obtainable from your dealer. Write us for further information and shim application chart.

Laminated Shim Company
Incorporated
90 Union Street • Glenbrook, Conn.

LAMINUM
THE SOLID SHIM THAT peels FOR ADJUSTMENT
2039

(*Continued from page* 254)

cluded in List C of Priorities Regulation No. 3, which were deleted August 10, are still applicable to the items they are applied to by the individual regulations.

At the same time, it is pointed out that MRO preference ratings may be used to obtain industrial pressure sensitive adhesive tape, generally called masking tape. This item is not included in list B of the Regulation under the listing "Gummed stay and sealing tape, paper and cloth," and therefore the use of MRO ratings in purchasing it is permissible.

GALVANIZED WARE MANUFACTURERS MAY USE LEFT-OVER QUOTAS

Action to permit manufacturers of galvanized ware and non-metal-coated metal ware to use, during any quarter, unused iron and steel left over from their previous quarterly quota was taken by the War Production Board in Amendment No. 1 to Limitation Order L-30-a, as amended.

USE OF STEEL STRAPPING EXTENDED

Use of steel strapping is permitted for several additional purposes under the terms of Conservation Order M-261, as amended by the War Production Board.

The permitted additional uses:

1. For wooden shipping containers in which vitreous china plumbing supplies or fixtures are packed. However, such use must be essential to safe delivery of such products, and strapping must have been customarily used for this type of shipment.
2. Use by railroads or truckers where needed to reinforce containers damaged in transit.

In addition, the definition of "steel strapping" is amended to allow the use of strapping for fastening together a group of filled containers into one unit.

Contract Termination

(*Continued from page* 84)

such obligations can not be lightly discarded, nor can they be casually shifted to a third party, and the seller is well within his rights to decline to accept a condition which would prejudice his chances of recovery in the event of a termination and adjustment. It is not the proper intent of a termination clause to leave anyone "holding the bag", but rather to arrive at an equitable adjustment of claims all along the line. Cancellations on the scale which may be expected under the present program will cause hardship and dislocations at best. From the standpoint of industry and of the national economy, this is a burden to be shared fairly since it can not be avoided entirely. There is a highly desirable element of equity and mutuality of both risk and protection when the buyer's termination clause follows the pattern of the provision in his own contract with the government and is consistent with its terms. Settlements will be quicker and more satisfactory when this is the case.

Three specimen termination clauses, taken from industrial contracts in actual current use, are reproduced herewith. The first of these is recommended for its specific statement of the basis on which settlement is to be made, and because it follows the general outline of the termination provisions in governmental contracts. Some good legal opinion holds that the beginning of the second clause is so broad that a court of law might well hold the entire contract illusory and of no effect. The third clause, binding the seller to "look to the Government" for payment on products not actually delivered to the buyer at the time of contract termination.

(*Continued on page* 258)

Keep Your Workers' Hands
Doubly Safe
with Stanzoils of DuPont's miracle neoprene

● Don't let dermatitis of the hands cost you production and injury claim expense — especially when Stanzoil gloves of DuPont Neoprene offer double protection at low cost. They resist damage by oils, acids, caustics, often last 3 to 7 times as long as rubber, keep hands safer. Also harmless to most hands hypersensitive to rubber. Black or white, standard styles and sizes. A profitable investment in good employee relations — write for latest delivery data.

Synthetic Rubber Division
THE PIONEER RUBBER CO.
257 Tiffin Rd., Willard, O., U. S. A.
New York • Los Angeles
STANZOIL
MADE WITH DU PONT NEOPRENE

WeldELLS have everything ★

"It's my job to find better ways—"

"A plant superintendent's tough job, as I see it, is to size up the facts and separate the something better from the so-called good enough. After all, there is only one *best* way to do a thing and it's my assignment to find it.

"Of course the difference between best and next best isn't so very great in some cases. But when it comes to welding fittings I think a cold appraisal will give a distinct edge to WeldELLS.*

"WeldELLS are basically sound from the start: Seamless—reinforced where stresses are greatest—engineered down to the last detail. Then, over on the practical side, they have everything it takes to speed up the job and cut costs. The clean machine tool bevels facilitate good welding and cut piping costs. Precision quarter-marks are a big help to the welder; and the permanent markings of size and weight on every WeldELL are nothing short of a must."

Yes, whether you are looking for safety, utility, convenience or economy—and who doesn't want them all?—you have in WeldELLS one of those rare products that offers you EVERYTHING!

★ **WeldELLS alone have all these features:**

- **Seamless**—greater strength and uniformity.
- **Tangents**—keep weld away from zone of highest stress—simplify lining up.
- **Precision quarter-marked ends**—simplify layout and help insure accuracy.
- **Selective reinforcement** — provides uniform strength.
- **Permanent and complete identification marking**—saves time and eliminates errors in shop and field.
- **Wall thickness never less than specification minimum**—assures full strength and long life.
- **Machine tool beveled ends**—provides best welding surface and accurate bevel and land.
- **The most complete line of Welding Fittings and Forged Steel Flanges in the World**—insures complete service and undivided responsibility.

The list of Taylor Forge's contributions to the war effort only begins with WeldELLS. One of many examples is Taylor Corrugated Marine Furnaces, essential to many merchant ships and transports.

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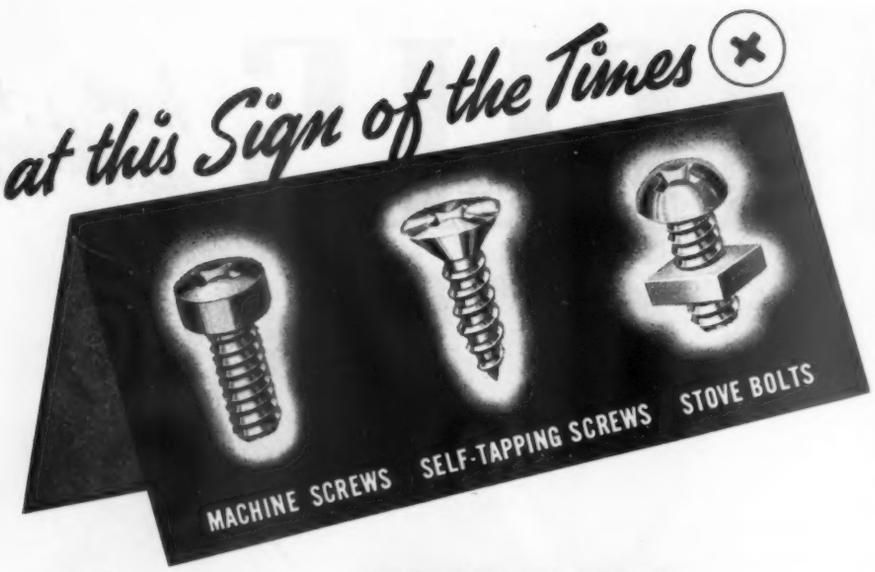
General Offices & Works:
Chicago, P. O. Box 485
New York Office: 50 Church Street
Philadelphia Office: Broad St. Station Bldg.

*WeldELLS and many other Taylor Forge products are produced in Byers Genuine Wrought Iron.



Remember . . . CENTRAL offers PHILLIPS Recessed Head Screws . . .

- **All Head Styles for:**
  - **Machine Screws**
  - **Stove Bolts**
  - **Self-Tapping Screws**

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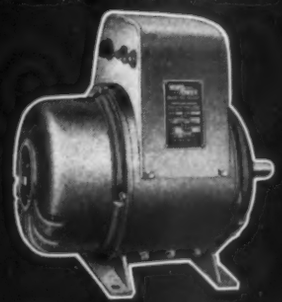
3515 SHIELDS AVENUE • CHICAGO, ILLINOIS
You can depend on Central

AC and DC Generators

—750-7500 Watts.
—Prompt Deliveries.
—Built to Fit Your Needs.



17 years specialized experience in manufacturing electrical generators of all types. Send us your specifications and let us quote you.

Wind Power Mfg. Co.
Since 1925 Dept. B, Newton, Iowa

TECHNICALLY CORRECT

Dayton wheels . . . manufactured to exact specification. Made in all types, sizes, grains, bonds and grades.

SIMONDS WORDEN WHITE CO.
DAYTON, OHIO

DAYTON GRINDING WHEELS

Contract Termination

(*Continued from page* 256)

and for the recovery of other costs incurred, is one which sellers should not accept without legal assurance that the government will recognize the claim, which is exceedingly doubtful. There is no contract with the government. As stated above, the government has no direct obligation to the subcontractor and would not be permitted to make such payments without special legislation.

* * *

Identifying Electrical Equipment

(*Continued from page* 91)

rors and misunderstandings from occurring on projects involving close clearances. In either case, the dimension prints should reach the right individual in the purchaser's organization.

Wiring Diagrams

Today, the purchaser often fails to receive the wiring diagrams and instruction books when the electrical equipment is installed. This happens either because one of the suppliers of the equipment has failed to pass this information on to the purchaser when it has been ordered, or because in cases where it has been passed on, it has become pigeon-holed in some department not concerned with the installation. Construction foremen and service engineers often have this experience. Obviously, many service calls would be necessary if these wiring diagrams and instruction books were delivered to the purchaser upon the completion of the installation. Manufacturers can help this situation by ordering this data and placing it promptly in the purchaser's hands.

Record Of Serial Numbers

There are definite advantages in the practice many manufacturers have of keeping a complete record, including the serial number, of every major electrical device used on the project.

For example, in a recent shipment to Alaska of an engine, a generator, and a switchboard, a considerable portion of the equipment was destroyed. The engine was found intact, however, and its serial number available. Through the records of the engine builder, a complete record of all the electrical apparatus originally supplied was obtained. As the result, the damaged equipment is now being duplicated.

ABRASIVE COMPANY

Standard Specifications

Tool Room Grinding Wheels

Job	*Standard Wheel*	*No. 18 Density Wheel**
Broaches	W60 -J-KY	W80- J-N18
Cutters	W46-K-HY	W60-L-P18
Die Blocks	W46-G-KY	W60-H-L18
Drills—		
Small	60-M-DY	
Large	36-M-DY	
Gears	W60- J-K8	W80-L-P18
Hobs	W60- J-K9	W80- J-N18
Machine Shops—General Off-hand	46-M-DY	
Reamers	W46- J-HY	W60- J-N18
Stellite Cutters	W46- J-HY	W60- J-N18
Tools—Lathe and Planer		
Light Offhand	46-M-DY	
Heavy Offhand	46-N-D9	
Heavy—Large Wheels	30-O-D9	
Fixture Grinding	W46- J-HY	W60- J-N18
Tungsten Carbide Tools—Offhand		
Roughing	G601- I-V9	
Semi-Finishing	G80-H-V8	
Finishing	G120-H-V8	

*No. 18 Density—Open, Porous Wheel with wide grain spacing.

For Best Results Follow These Suggestions

1 Sharpen tools and cutters frequently

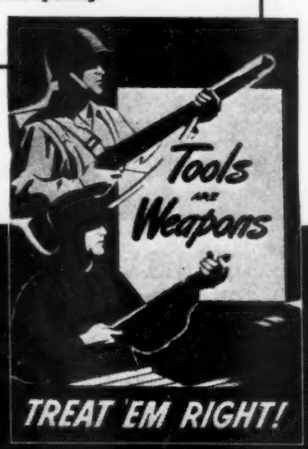
The waste of critical alloy steel resulting from infrequent regrinding is enormous because so much of the tool has to be ground away to renew the cutting edge.

2 Dress and true the grinding wheel

Dress frequently enough to retain correct wheel shape and to keep the abrasive cutting particles clean and exposed for most efficient grinding action. Excessive dressing, however, wastes the grinding wheel.

3 Use the best grain and grade of wheel for your job

ABRASIVE COMPANY "white" and "red" tool room grinding wheels have been standard for many years for all types of tool and cutter grinding. For exceptionally fast and cool grinding action on heat sensitive alloy steels specify the newer "No. 18 Density" wheels with open, wide-spaced porosity.



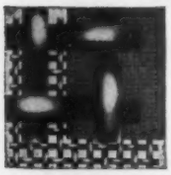
ABRASIVE COMPANY

DIVISION OF SIMONDS SAW AND STEEL CO.

TACONY & FRALEY STS., PHILADELPHIA 37, PA.

Distributors in all principal cities

DO YOU USE WIRE CLOTH?



Objective
- Uniform Workmanship
- Economical Production
- Deliveries on Schedule

for your requirements

OR WIRE CLOTH PRODUCTS?

Solution
- We Draw the Wire
- Weave the Cloth
- Fabricate the Product

in one continuous line

Send Michigan Your Inquiries

MICHIGAN WIRE CLOTH COMPANY
2100 HOWARD • DETROIT

A Good Soldier on the *Production Front*

PRODUCTIMETER

Counting and Measuring Devices, for various types of production machines, are available in several styles and models: Stroke, Rotary, Predetermined, Yardage, Lumber, Wire Measuring, Conveyor and Electric. They're ruggedly built for hard usage, extreme accuracy and dependability . . . speeds 400 to 5000 counts per minute . . . capacities 3 to 8 figures.

If you have a counting problem, write us. Our advice and recommendations are backed by 64 years' experience in the exclusive manufacture of counting and measuring devices.

Reference Bulletin No. 100 on request!

DURANT MFG. CO.
1959 N. Buffum St. Milwaukee, Wis.
159 Eddy St. Providence, R. I.

Army Supply Procedures

(*Continued from page* 94)

brought a reduction of 23% in personnel and 21% in total work steps involved.

Businesslike Management

Recently the Control Division, ASF, has attempted to arouse interest in work simplification studies for other than clerical operations. A "Gang Chart" made in a study of 15 gangs unloading freight cars at the New York Port of Embarkation achieved an average reduction of 30% in the work force by balancing operations and eliminating idle time.

A large part of the work done by the Control Division in Headquarters, ASF, is aimed at special problems which lie outside procedural studies and reports. In this work, officers of the Control Division act as "trouble shooters" for General Somervell and General Styer in re-evaluating traditional Army practices as they apply to the operations of the Army Service Forces.

The important advances in industrial engineering and management represented by the work of control officers exemplify the heavy dependence of the ASF on the ingenuity and efficiency of private management in the United States. Besides those from law and the Government, the officers of the Control Division have come to their present positions from companies which include, among others, Sears Roebuck, International Business Machine, Johns-Manville, General Mills, Lehman Bros., Bell Telephone, American National Bank of Chicago, John B. Stetson, American Meat Packers Institute, and Marshall Field.

* * *

How to Buy Printed Forms

(*Continued from page* 101)

rect quantities to purchase and deliveries to specify.

Some buyers of printing also find it economical to purchase electros and paper stock to supply their printers. It may not be possible to eliminate the entire handling charge, but it should be possible to reduce it by at least 50%. In large companies it is sometimes advisable that

(*Continued on page* 262)

HEAVY BEVEL SAFETY
(Reg. Trade Mark)
LETTERS AND FIGURES

"SAFETY" STEEL CONSTRUCTION. DEEPER, CLEAR IMPRESSIONS. WILL NOT SPALL, WILL NOT MUSHROOM. OUTSTANDING SERVICE. ANY SIZE CHARACTER FROM 1/32" UP.

Immediate Delivery

M.E. CUNNINGHAM CO.
SAFETY STEEL STAMPS
154 E. Carson St. Pittsburgh, Pa.

SAVE MONEY
DARNELL

CASTERS

DARNELL CORP. LTD.,
LONG BEACH, CALIFORNIA,
60 WALKER ST., NEW YORK, N.Y
36 N. CLINTON, CHICAGO, ILL

feeding a "GENERAL SHERMAN"

OIL and gasoline are playing an important role in this war. Tanks, trucks, jeeps, planes, boats—thousands of them are dependent on a steady stream from America's petroleum fields. Not a drop could be furnished without the aid of many mechanical rubber and synthetic products. . . . . Drilling uses rotary hose, pumping uses heavy-duty belts, shipping uses suction and discharge hose, delivery to the vehicle demands hose and many other uses exist in production, refinery and transportation operations. For years Republic has built these products of both synthetics and natural rubber for the petroleum industry. The first pieces of "REPRENE" hose, a Republic synthetic-improved product, were built for handling petroleum products and its ability to resist oil, solvents, heat, light and age have made "REPRENE" a favorite in this industry. . . . . This is another example of an industry where rubber and synthetic products are vital to the war effort—and where Republic has made an outstanding contribution.

Accredited Distributor

The rapid and efficient service on needs for Republic Mechanical Rubber Products is furnished by distributors in all sections of the country who display this emblem. As local business men, they know your requirements and maintain stocks and facilities to meet them. This emblem is Republic's assurance of their qualifications.

WE ARE PARTICIPANTS IN THE OWNERSHIP AND OPERATION OF NATIONAL SYNTHETIC RUBBER CORPORATION

REPUBLIC RUBBER

YOUNGSTOWN 1 • • OHIO

OSE • BELTING • MOLDED GOODS PACKING • EXTRUDED PRODUCTS

DIVISION OF

LEE RUBBER & TIRE CORPORATION

Ask for this book

Tells you how to take care of small tools-Bolt Clippers, Files, Taps, Drills, etc. The boiled down facts to help you get the most out of these tools-use, wear, repair and selection. Handy pocket size. Just ask on a post card for- Porter's Tool Maintenance Book it's FREE

REG. U. S. HKP PAT. OFF.

PORTER CUTTERS

BOLT CLIPPERS — AUTOBODY REPAIR TOOLS — PRUNERS

H. K. PORTER, INC., 407 ASHLAND ST., EVERETT, MASS.

How To Buy Printed Forms

(*Continued from page* 260)

private company watermarked paper be purchsed and controlled by the owner of the watermark.

Envelope Standardization

The relationship between forms and envelopes is such that the standardization of envelopes is more or less concomitant to that of forms.

Where there has been a reduction in the number of different form sizes, it is reasonable to expect a corresponding decrease in the number of different envelope sizes required.

Advantageous combinations may be made and savings effected, even where corner cards differ, if the same style of type is used throughout and envelope sizes are few in number. Where corner card variations occur on envelopes of the same size and style, it is only necessary to stop the press, change one or two slugs or a plate and continue the run.

The total quantity ordered of any one size and style of envelope determines its base price; there is only a nominal additional charge for corner card changes.

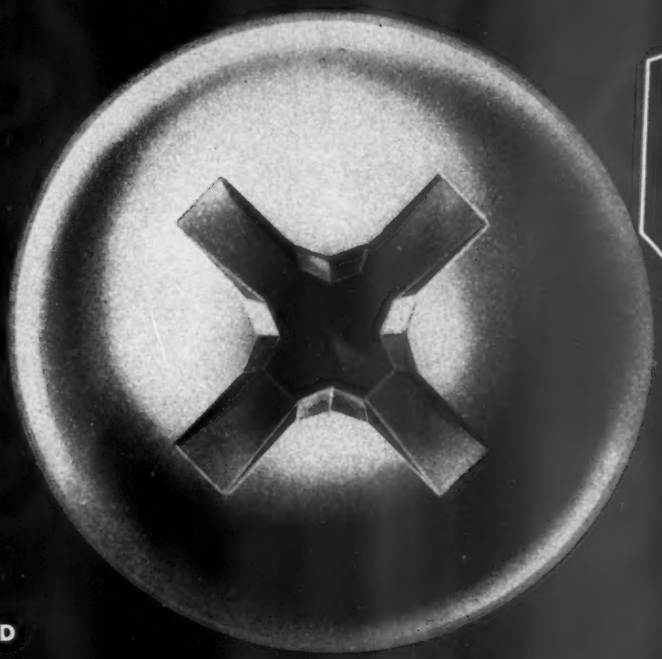
The author advocates the use of window envelopes, wherever possible. The extra cost of window envelopes is more than offset by the saving in time and labor necessary to address regular envelopes. This is an important factor when the volume of outgoing mail is large and every minute of precious typewriter time is needed for the production of essential matter.

The principles outlined above may also be generally applied to tags, labels, advertising matter, continuous forms and one-time snapouts as well as to regular forms and envelopes.

In conclusion, I would like to point out that while maximum savings can be effected only by a complete program, it is possible to effect extremely worthwhile savings by means of a partial program. Occasionally, it is neither possible nor practical for the Forms Department to arrange combinations of forms for gang printing; but there is no reason why all other measures advocated cannot be readily applied. For instance, if a form is reduced from an odd, wasteful size to one that will cut economically from a basic sheet, a saving in production

(*Continued on page* 264)

IT MUST BE RIGHT!



21 Leading Makers of Screws recommend the PHILLIPS RECESSED HEAD

WOOD

MACHINE

SELF-TAPPING

STOVE

21 Concerns Offer the Phillips Head

AMERICAN SCREW CO. . . . . . *Providence, R. I.*
THE BRISTOL CO. . . . . . *Waterbury, Conn.*
CENTRAL SCREW CO. . . . . . *Chicago, Ill.*
CHANDLER PRODUCTS CORP. . . . . . *Cleveland, Ohio*
CONTINENTAL SCREW CO. . . . . . *New Bedford, Mass.*
THE CORBIN SCREW CORP. . . . . . *New Britain, Conn.*
THE H. M. HARPER CO. . . . . . *Chicago, Ill.*
INTERNATIONAL SCREW CO. . . . . . *Detroit, Mich.*
THE LAMSON & SESSIONS CO. . . . . . *Cleveland, Ohio*
THE NATIONAL SCREW & MFG. CO. . . . . . *Cleveland, Ohio*
NEW ENGLAND SCREW CO. . . . . . *Keene, N. H.*
THE CHARLES PARKER CO. . . . . . *Meriden, Conn.*
PARKER-KALON CORP. . . . . . *New York, N. Y.*
PAWTUCKET SCREW CO. . . . . . *Pawtucket, R. I.*
PHEOLL MANUFACTURING CO. . . . . . *Chicago, Ill.*
READING SCREW CO. . . . . . *Norristown, Pa.*
RUSSELL BURDSALL & WARD BOLT & NUT CO. . . . . *Port Chester, N. Y.*
SCOVILL MANUFACTURING CO. . . . . . *Waterville, Conn.*
SHAKEPROOF INC. . . . . . *Chicago, Ill.*
THE SOUTHINGTON HARDWARE MFG. CO. . . . . . *Southington, Conn.*
WHITNEY SCREW CORP. . . . . . *Nashua, N. H.*

Out of the many screw heads designed through the years to eliminate screw driving troubles, *only* ONE has gained wide approval by the men who should know most about screws... the men who develop and produce fastening devices.

It is highly significant that the leaders in the screw industry . . . *21 concerns* . . . recommend the PHILLIPS RECESSED HEAD as the first recessed head that is *right* in every respect! It assures you that screw driving troubles will be ended when you specify PHILLIPS. Also, it means convenience in buying, and prompt and capable service.

KEY TO FASTENING SPEED AND ECONOMY

The Phillips Recessed Head was scientifically engineered to afford:

Fast Starting – Driver point automatically centers in the recess . . . fits snugly. Screw and driver "become one unit." Fumbling, wobbly starts are eliminated.

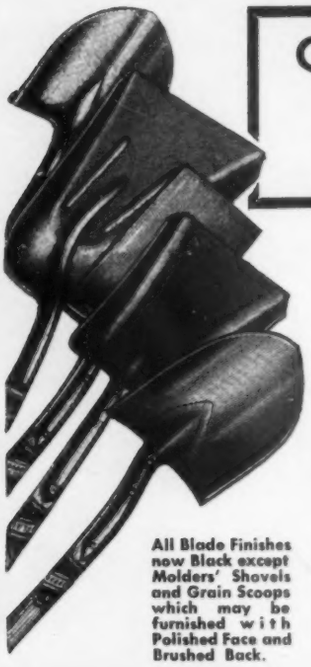
Faster Driving – Spiral and power driving are made practical. Driver won't slip out of recess to injure workers or spoil material. (Average time saving is 50%.)

Easier Driving – Turning power is fully utilized by automatic centering of driver in screw head. Workers maintain speed without tiring.

Better Fastenings – Screws are set-up uniformly tight, without burring or breaking heads. A stronger, neater job results.

PHILLIPS *Recessed Head* SCREWS

WOOD SCREWS • MACHINE SCREWS • SELF-TAPPING SCREWS • STOVE BOLTS



All Blade Finishes now Black except Molders' Shovels and Grain Scoops which may be furnished with Polished Face and Brushed Back.

GET THIS . . .
EXTRA VALUE in SHOVELS!

The Blade Edges are GUARANTEED SPLIT-PROOF!

The Steel for Ingersoll Shovel Blades is produced in our own steel mills by a cross-rolling Process. It is called TEM-CROSS Tillage Steel, and is the same as is supplied by us to America's leading Implement Manufacturers. Cross-rolling gives an interlocking, mesh-grain structure which resists splitting. Get this extra value in every Shovel you buy.

Write for Catalog and Prices.
Address New Castle Plant. Dept. P.

INGERSOLL STEEL & DISC DIVISION
Borg-Warner Corporation
New Castle, Indiana
Plants: New Castle, Ind.; Chicago, Ill.; Kalamazoo, Mich.

INGERSOLL SHOVELS
"The Borg-Warner Line"

BEARING LOCKNUTS
N 00 TO AN 40
★
STANDARD
★
HEAVY DUTY
★
SPECIAL
★

Vital Links in modern Production

ALLIED MACHINE & ENGINEERING CORP.
NEW PHILADELPHIA, OHIO

How To Buy Printed Forms

(*Continued from page* 262)

and paper cost will result, regardless of whether it is bought singly or in combination.

As an integral part of a Forms Survey, a forms manual should be developed, outlining standards for both forms production and use.

Application of the principles outlined, over a period of nearly seven years, has resulted in important savings, despite an extremely complex setup involving thousands of forms used by many companies in various locations.

* * *

How Uncle Sam Is Handling Surplus Property

(*Continued from page* 104)

instructions, Congressionally dictated.

In any event, whether sale of normally accrued federal surpluses or property derived from liquidation operations, the Federal Property Utilization Branch, unless otherwise instructed (as in the case of NYA property), acts upon direct lines.

It first appraises whatever equipment is available. Through its Regional Property Offices, it next attempts to locate a Federal user having legitimate need for the property. Transfer is then arranged, with an exchange of funds within the region where the property is located, if this is possible.

In the event that no Federal user is located, the property is next made available to non-Federal tax supported authorities, such as States, Counties, Municipalities. Sales to such authorities may be arranged on a negotiated basis, once a legitimate need for the items has been determined.

I might also point out that in the first case, that of transfer to Federal agencies, the bulk of such transfers are to directly-connected war agencies who, after taking possession of equipment, have in many cases put the actual machines to work in the plants of contractors doing war work—thus immediately placing into the war effort, and at the disposal of private enterprise, federal surpluses.

Following these operations, the Federal Property Utilization Branch will make available to war contractors and to the general public any

(*Continued on page* 266)

THE BIG THREE
of Rollway's Right-Angle Bearing Loading

1. GREATER BEARING CAPACITY

2. LOWER STARTING TORQUE

3. REDUCED MAINTENANCE TIME

Whether it's heavy radial loads or thrust loads . . . constant loads or shock loads . . . that are bothering you, change-over to Rollway Precision-Type Cylindrical Roller Bearings offers a quick, easy way to achieve: 1—more bearing capacity; 2—lower starting torque; 3—improved service from a maintenance standpoint. ALL within the dimensional limits of your present sleeve-type bearings.

RADIAL
THRUST
For longer bearing life, more efficient performance and more economical maintenance . . .
FOLLOW THIS BASIC BEARING PRINCIPLE
• All radial loads carried at right angles to the roller axis.
• All thrust loads carried at right angles to the roller axis.

Right-Angle Loading Simplifies the Stresses

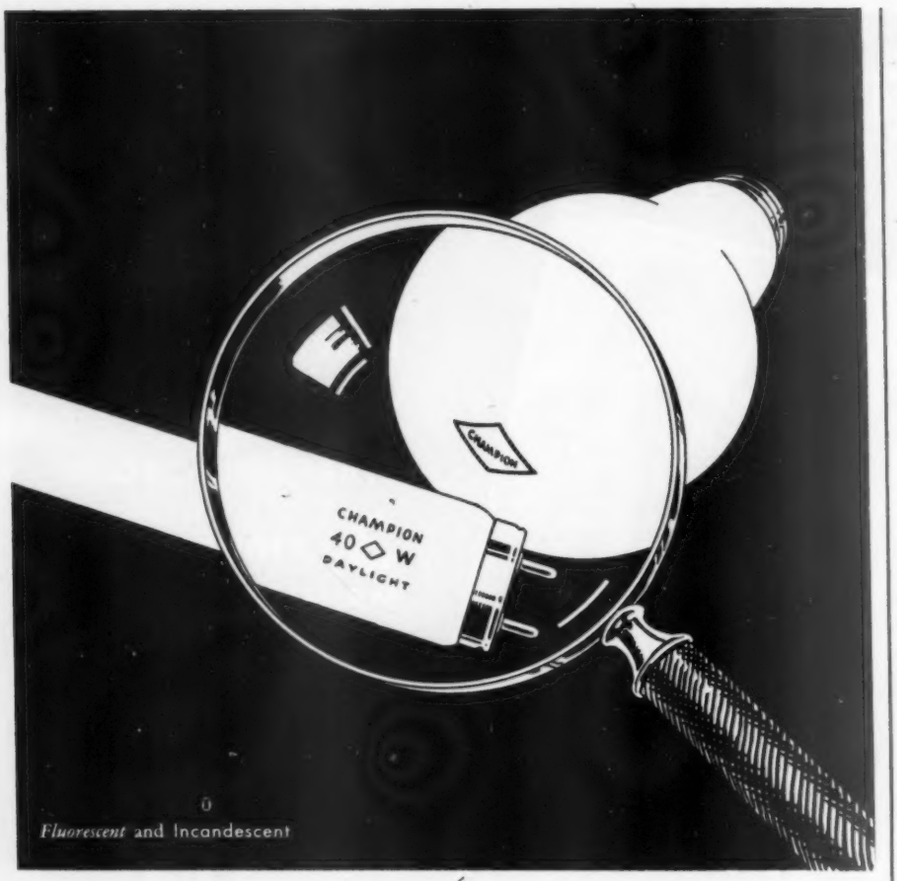
Simplification — that's the answer back of the increased capacity and life of Rollway's Cylindrical Roller Bearings. For Rollway splits every load into its two simple components of *pure radial* and *pure thrust—carrying each of these on separate bearing assemblies at right angles to the roller axis.* That eliminates compound loads, oblique loads, and the resultants of compound forces. The total magnitude of stress carried per roller and per bearing is substantially less. Rollers and races stand up longer. Lubrication is simplified. And the cylindrical rollers eliminate all tendency to pinch out between the races, greatly reducing end-rub and wear-back of the roller head.

Standard Sizes for Most Applications

S.A.E. or American Standard metric dimensions and tolerances in a wide range of sizes and types assure low cost and ready availability for most applications. Let Rollway engineers recommend the types best suited for your needs. Just send drawing or detailed description. No cost or obligation for this helpful service.

ROLLWAY BEARING COMPANY, INC., SYRACUSE, N. Y.

BUILDING HEAVY-DUTY BEARINGS SINCE 1908 **BEARINGS**



Fluorescent and Incandescent

A GOOD THING to LOOK for on YOUR LAMPS

The *diamond* symbol appears on every genuine CHAMPION lamp. Its four points signify:

1. **CHAMPION QUALITY** — guaranteed to equal or exceed Federal Specifications; backed by a big, modern plant containing complete production, testing and engineering facilities and by an organization specializing in fine lamp manufacture since 1900.
2. **CHAMPION SERVICE** — the right *Fluorescent* or Incandescent Lamps for each specific need. Trained experts in the field, prepared to render competent assistance on any lamp or lighting problem.
3. **CHAMPION ECONOMY** — lower light and lamp costs than are obtainable with any other lamps of equal quality.
4. **CHAMPION DISTRIBUTION** — through qualified industrial suppliers in your locality, equipped to meet emergency needs efficiently and economically.

Look for the CHAMPION Diamond. Remember what it stands for.

CHAMPION LAMP WORKS
Lynn, Massachusetts
A DIVISION OF CONSOLIDATED ELECTRIC LAMP CO.

How Uncle Sam Is Handling Surplus Property

(*Continued from page* 264)

remaining items, through sealed bid sales.

As of today, the proportion of sales to Federal agencies as compared with sales to non-Federal enterprises is, of course, decidedly in favor of the former. This is due both to the vast projects now being carried on by the Federal government and the fact that the government, like anyone else, is suffering certain shortages.

However, as dissolution of various agencies arises and proceeds, and as the needs of Federal agencies are more nearly served, the percentage will begin to rise in favor of non-Federal authorities and private enterprises. More and more surpluses are expected to become available for sale—surpluses consisting of almost every imaginable item.

Since the "For Sale" sign is already out to Federal agencies (which hold top priority on this property) it is naturally difficult to give concrete figures and facts on what property exists today, now, for sale to the public. These inventories are fluid. They change not only from week to week but from day to day and, on critical items, from hour to hour.

However, some surpluses do exist for sale, having run the course herein outlined. In connection with these surpluses, it is our earnest desire to put every machine to work; to offer what we have and offer it as rapidly as possible.

This is being done through our Regional Procurement Offices, listed herewith, so that prospective buyers may obtain information through direct inquiries.

Federal Specifications

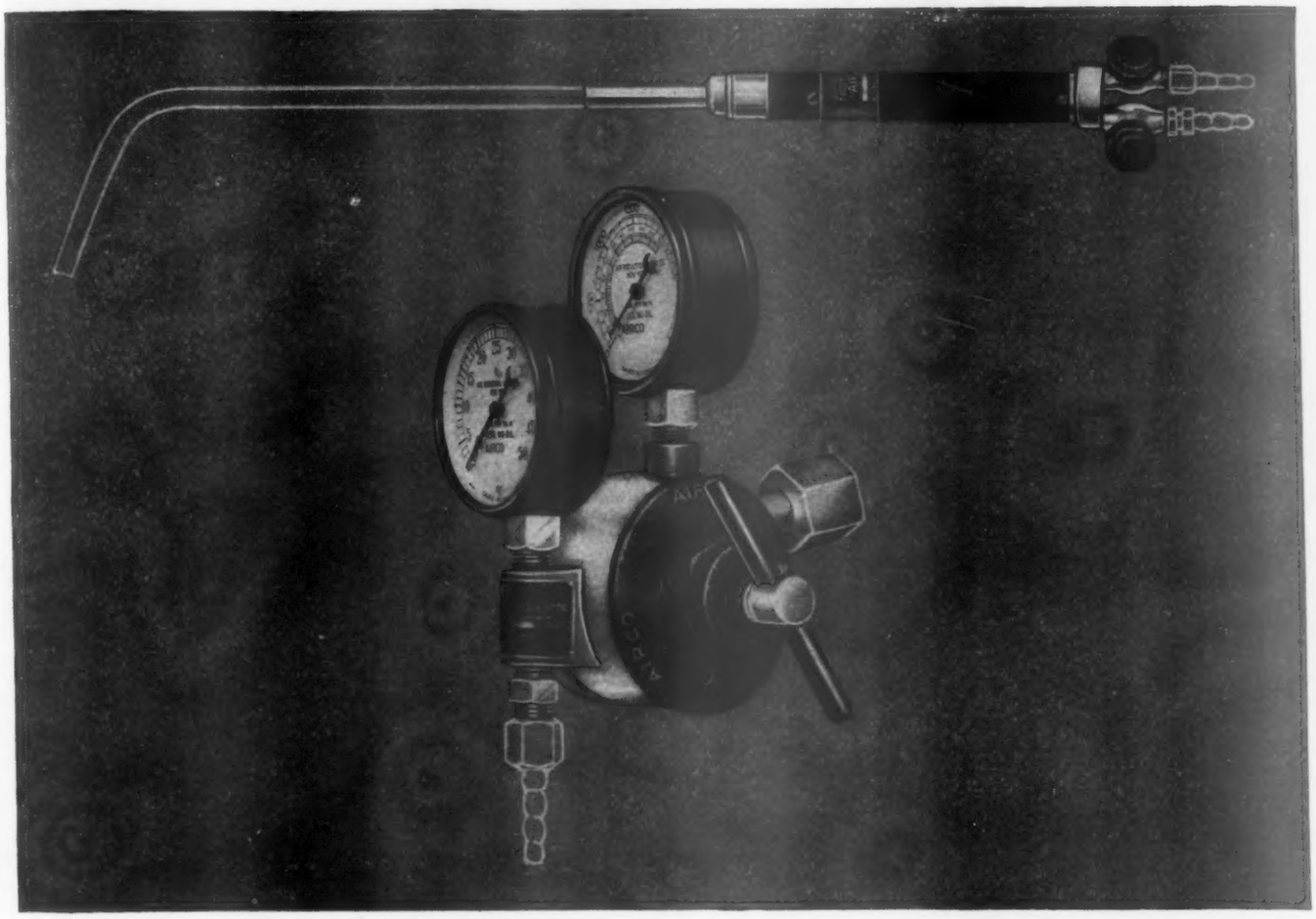
(*Continued from page* 115)

sued, to take care of necessary deviations from the standard Federal Specifications on account of critical and strategic materials used in the war emergency.

In the preparation of Federal Specifications for material, supplies, and equipment, an effort is made to bring the specifications into harmony with commercial practice wherever conditions permit, to estab-

(*Continued on page* 268)

A *Change* IN APPEARANCE



. . . BUT NONE IN PERFORMANCE

To conserve copper, copper base alloys and stainless steel, some component parts of Airco torches and regulators are now made of less critical materials. The dark areas in the above illustration indicate the parts affected by this change. All these parts are treated with a special coating for maximum protection against corrosion.

In all other respects, Airco torches and regulators are unchanged.

★ ★ ★

The parts shown in white outline above will no longer be furnished automatically with torches or regulators. This also is done for the purpose of conserving critical materials.

Purchasers desiring hose connections should therefore be sure to include them specifically when ordering torches or regulators. The same should be done with tips when ordering torches—in this case mentioning the size or sizes of the tips required.

★ BUY UNITED STATES WAR BONDS ★

AIRCO WILSON

AIR REDUCTION

General Offices: 60 EAST 42nd STREET, NEW YORK 17, N. Y.

In Texas: MAGNOLIA AIRCO GAS PRODUCTS CO. • General Offices: HOUSTON, TEXAS

No adjustments necessary in a West-Serviced plant

Today, the increased demands of war production have further proven the worth of West products, even when tested against the new problems created by the employment of women workers in heavy war industry.

LAN-O-KLEEN* for healthier hands

Lan-O-Kleen is a double-action corn-meal soap, impregnated with emollient lanolin. First, it removes virtually all types of dirt and grime—*without getting tough about it.* Then it "Work-Conditions" the hands by putting on an oil similar to natural skin oils. Lan-O-Kleen helps nature to maintain a normal, healthy skin condition.

WEST PROTECTIVE CREAMS

As a result of many articles on the subject, women workers are more than ever aware of the wisdom of using protective creams as an added precaution against dermatitis. But it is in the interest of management to provide workers with the PROPER protective cream — one that the West laboratories have prepared after careful research to best combat the hazards of dermatitis aggravated by those specific irritants peculiar to the various materials handled.

Write for literature on these products or request that a West specialist call to see you.

*Trade Mark Reg. U. S. Pat. Off.

55 BRANCHES • HELPING TO GUARD INDUSTRIAL HEALTH • COAST TO COAST

WEST DISINFECTING Company

42-16 WEST STREET - LONG ISLAND CITY - N. Y. - Dept. P.

Federal Specifications

(*Continued from page 266*)

lish uniform nomenclature, to standardize dimensions, to insure ready interchangeability of supplies and inter-working parts made by different manufacturers, and to limit the number of types, grades, and sizes of articles purchased by the Government.

In the Government service there is the most varied aggregation of technical and scientific talent to be found in this country, covering every branch of knowledge, the best of which is utilized in the personnel of the various technical committees. Qualified officers and civilians for the War Department, Navy Department, Coast Guard, and Marine Corps, work with scientific and technical civilians from the various technical bureaus of the Government.

Federal Procedure

The procedure adopted for the preparation of Federal Specifications is as follows:

The need of a specification for a given article, for either technical or business reasons, is fully considered, and if it is decided that a Federal Specification is needed, particularly if it is used by two or more departments, the subject is referred to a technical committee composed of all existing Government, industrial, and commercial specifications.

A specification is selected or written by the technical committee concerned, which will be suitable for the uses of all executive departments and independent establishments of the Government. The comments and criticism of interested engineering and technical societies, and commercial and industrial concerns are invited, and their suggestions and recommendations are fully considered. The specification as agreed upon by the technical committee is then submitted by its Chairman to the Vice Chairman of the Federal Specifications Executive Committee, who in turn officially submits it to all executive departments and independent establishments of the Government, through their respective technical liaison representatives, for comment and criticism. All comments and criticism received from the departments are referred to the technical committee concerned for consideration. When the specification is finally agreed upon by the technical committee, it is submitted by the Chairman of the Federal

(*Continued on page 270*)

"Get me some of the new BRASS buttons . . . no more of those old-fashioned pewters!"

BACK in the early eighties, in Connecticut's valley of the Naugatuck, brass founders found themselves teetering on the crest of a sudden wave. High fashion ruled that beaux and belles should no longer be caught dead wearing dull pewter buttons. Bright brass was the new edict.

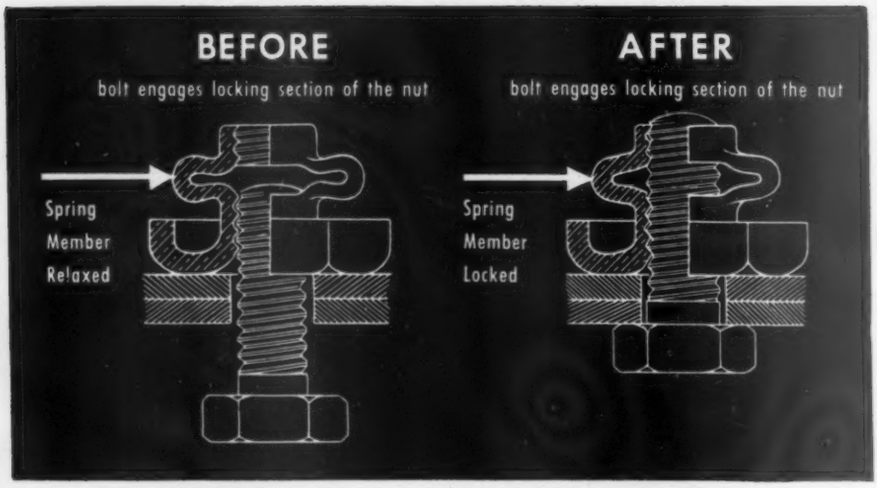
With this impetus, Yankee progress in brass technology spurted forward. The new industry attracted more experienced men from overseas, demanded new machines and methods for rolling the brass sheet needed in button-making. So brass buttons came to stay . . . and today millions of them carry the U. S. shield on military uniforms. Then other new uses opened up. Brass, for instance, replaced wood in all clock-gears, and here too, it came to stay.

Now as then, in the development of new products . . . whether decorative, functional or industrial . . . the golden-yellow metal simplifies countless problems of design and application by its matchless qualities of adaptability, machinability, durability and appearance. And many are the uses in which no substitute has ever been found for brass, either to the satisfaction of fabricator or consumer . . . *either in war or peace.* And when this war is won, brass will return not only to its traditional uses, but will extend to many new ones. Then Bristol, with its intensive war experience, will be ready to help manufacturers heighten the prospects of many a postwar product . . . such, perhaps, as *yours.*

BRISTOL BRASS

★ ***Buy War Bonds to Buy Brass for Bullets*** ★

THE BRISTOL BRASS CORPORATION, MAKERS OF BRASS SINCE 1850, AT BRISTOL, CONNECTICUT



VIBRATION-PROOF NUTS

One-piece, all-metal construction gives Boots Self-Locking Nuts these distinct advantages over all other nuts: greater re-usability in maintenance; proof against corrosive action of oil, water and chemicals; resistance to high temperatures. Boots Nuts meet all specifications of government aviation agencies in an industry where loose fastenings will not be tolerated.

There's a BOOTS NUT for every application

ROL-TOP

BOOTS

ANCHOR

BOOTS AIRCRAFT NUT CORPORATION
GENERAL OFFICES, NEW CANAAN, CONNECTICUT

SPARTANS CUT TO BEAT THE BAND

SPARTAN
HACK and BAND SAWS

Increase production and reduce costs per cut. The Spartan method of heat treating results in unusual cutting and wearing qualities, rigidity, strength and toughness.

See Your Dealer Today

Spartans Get Results

Spartan Saw Works, Inc.
SPRINGFIELD, MASS.

HOTEL PHILADELPHIAN
FORMERLY HOTEL PENNSYLVANIA
DANIEL CRAWFORD, JR., Mgr.
39th and CHESTNUT STREETS
PHILADELPHIA, PENNSYLVANIA

Our courteous and competent staff will give you the utmost in friendliness, comfort and service. Conveniently located to all stations, and only five minutes away from the heart of the business section.

600 ROOMS
Each with bath from $3.00 up

RADIO IN EVERY ROOM

Lounge and Restaurants
Unrestricted Parking to 3 a.m.

Federal Specifications

(*Continued from page 268*)

Specifications Executive Committee to the Director of Procurement for approval as a Federal Specification for use by the departments and establishments, and if such action is favorable, it is duly promulgated by him to the Heads of all Departments and Establishments after being printed.

Federal Specifications are required to be used by the various purchasing activities of the Federal Government, with certain exceptions provided for in the Regulations Governing the Operation of the Procurement Division, Treasury Department.

Federal Specifications are continually being revised to keep them abreast of the best current manufacturing practice, and the needs of the Government.

A Scientific Basis

The use of specifications in purchasing is eliminating the makeshift method of describing articles wanted, by citing the trade name or brand of some fairly well-known product, in the common phrase "so and so or equal". This practice is objectionable in that whenever an attempt is made to purchase an article other than that of the brand cited, the purchasing officer is immediately put on the defensive as to its being the "equal." Furthermore, since it very probably requires tests to be made on samples before award is made, as well as on deliveries, if the Government's interests are to be protected, the expense for testing is doubled.

The use of standardized Federal Specifications is also reducing to a minimum the practice of buying on "standard sample". Such a practice probably limits competition and at best the comparison of the standard sample with the goods delivered frequently is inconvenient, as standard samples are more or less inaccessible not only to the trade, but also to the user, and there is the possibility that they will deteriorate or change in some of their characteristics. However, there are cases where it is admittedly necessary to have comparison or standard samples, for example, with color finish, texture, or some characteristic, that is difficult to descibe in words.

The specifications promulgated by the Director of Procurement include a wide range of materials—from hardware to hosiery, and from pig iron to provisions. About 125,000

(*Continued on page 273*)

Whatever the material handling problem
CLARK FORK TRUCKS
speed deliveries — save manpower —
reduce handling — in War or Peace

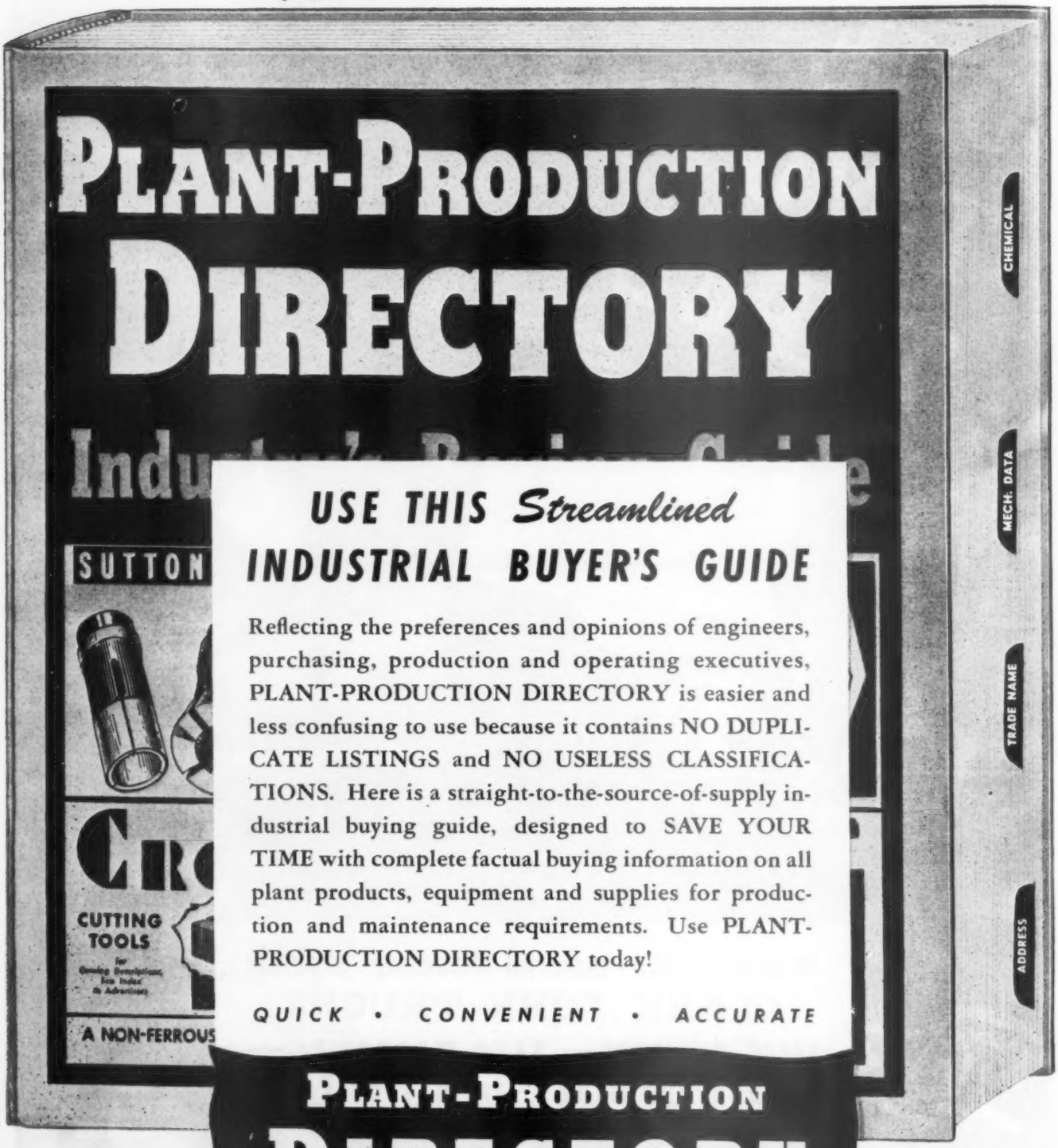
ARMY NAVY

SAVE
BUY MORE
BONDS

EASTERN AIR LINES PHOTO

CLARK TRUCTRACTOR
DIVISION OF CLARK EQUIPMENT COMPANY
BATTLE CREEK, MICHIGAN, U.S.A.

Designed— to Save YOUR Time!



USE THIS *Streamlined* INDUSTRIAL BUYER'S GUIDE

Reflecting the preferences and opinions of engineers, purchasing, production and operating executives, PLANT-PRODUCTION DIRECTORY is easier and less confusing to use because it contains NO DUPLICATE LISTINGS and NO USELESS CLASSIFICATIONS. Here is a straight-to-the-source-of-supply industrial buying guide, designed to SAVE YOUR TIME with complete factual buying information on all plant products, equipment and supplies for production and maintenance requirements. Use PLANT-PRODUCTION DIRECTORY today!

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PLANT-PRODUCTION DIRECTORY, 333 N. MICHIGAN AVE., CHICAGO 1, ILLINOIS

Federal Specifications

(*Continued from page* 270)

different items are purchased and used by the various branches of the Government service.

In the preparation of purchase specifications for Government use, the needs of the Government and the methods of production are coordinated in a manner which is fair to and understood by both producer and the Government, and the use of these specifications has greatly simplified purchasing by the numerous procuring agencies of the Federal Government, and has effected large economies.

The Federal Specifications prepared by the various technical committees and approved and promulgated by the Director of Procurement, are recognized as being a distinct accomplishment in standardization, not only in connection with Federal Purchasing, but also in connection with industry, where they are being adopted more and more.

An Index of the various Federal Specifications is available by purchase from the Superintendent of Documents, Government Printing Office, Washington, D. C., price 10 cents (cash, check, money order or coupon).

1 1 1

The Good Will Problem in Buying

(*Continued from page* 118)

number of cases where no effort has been made to maintain personal contacts over a period of many months. If we order anything from those companies, the business is done with the house direct. It seems to me a short-sighted policy not to keep up regular contacts, with a view to the post-war business—and I can see the picture from both sides, for I was in sales work before purchasing. The steel jobbers have a good arrangement; their boys spend a number of days each week on inside work, and use the other days on the outside, contacting the companies from which their business comes.

"On prospective post-war products, I've received several calls. These have usually been made, not by the salesman of the company with something new in sight, but by the district sales managers. Those men are very alert about what the future

(*Continued on page* 274)

THIS IS THE WHEEL* MR. JONES

● Maybe you were stumped by grinding jobs before, but they won't worry you any more.

300 shapes and sizes—every grade and grain—there is a Chicago Mounted Wheel custom-built to take on *any* grinding problem. Each wheel is a whirling point of power that turns your jobs out smooth—and in a hurry.

PROMPT DELIVERY

Action is the keynote from the moment your order comes in. Our wartime set-up concentrates on mounted points and grinding wheels 3" in diameter and under.—Production is stepped up and keeps pace with demand. Another advantage to you is our central location.

*Half a century of specialization has established our reputation as the small wheel people of the abrasive industry.

TEST WHEEL FREE

Tell us the job, type grinder and size wheel you use and we'll send one prepaid.

NEW CATALOG—Shows Chicago Mounted Wheels in actual colors, also portable/electric tools and time-saving accessories.

CHICAGO WHEEL & MFG. COMPANY
118 S. Aberdeen St. Chicago 7, Illinois

☐ Send Mounted Wheel Catalog ☐ Free Wheel. Size ..... ☐ Also interested in Grinding Wheels

118-10

Name .....

Address .....

MARVEL SAWS

CUTS the Toughest Steels and Largest Sizes easily

This giant hydraulic metal-cutting saw is more than just a larger hack saw. It is a new development in metal-cutting methods that introduces a new principle of metal sawing — the Roll-stroke blade action makes it possible to cut the toughest steels in the largest sizes easily and rapidly. It also permits a simple and efficient, very low pressure Hydraulic Feed System.

Built for heavy work, completely enclosed in heavy housing, this machine will stand up under the rough usage of the average steel mill warehouse and forge shop, where it will speed cutting-off, and reduce material loss.

MARVEL No. 18
Giant Hydraulic
Hack Saw
Capacity 18" x 18"

ARMSTRONG-BLUM MFG. CO.
"The Hack Saw People"
5700 Bloomingdale Ave., Chicago, U. S. A.
Eastern Sales Office: 225 Lafayette St., New York

Write for Catalog

PLASTIC NAME PLATES

DIAL-FACES
CHARTS, SCALES
CALCULATORS
Patent Notices
Instruction Plates
Markers, etc., etc.

LAMINATED
for Permanence

SAMPLES AND ESTIMATES CHEERFULLY SUPPLIED
Dept. NP

HOPP PRESS
INCORPORATED
460 W. 34th Street
New York, N.Y.

PURCHASING DEPARTMENT

. . . of medium sized manufacturer, 100% in war production, requires reliable man with buying experience. Factory located approximately 40 miles from Grand Rapids, Michigan. With your application please give references, experience, draft status, age and salary requirements.

Applicants must qualify under War Man Power Stabilization Plan.

Write to Box 949,
PURCHASING

The Good Will Problem In Buying

(Continued from page 273)

holds, after the war business is over."

The Purchasing Agent for a manufacturer of radio parts, now engaged in war production, said: "I haven't run into anything that I could complain about very loudly. But salesmen on the vital things I buy are apparently extinct. A few salesmen call but they are either from companies having no war business or from 'cat and dog' outfits, and they cry on your neck for a share of what little there is in their line.

Eight Months' Delivery

"I never see a radio tube salesman any more. We deal direct with their headquarters. When I put out an inquiry for tubes wanted in three or four months, I'm told by one company that eight months is the earliest possible delivery. When I check with that company's competitors, I find they are all in the same boat. Then by whittling here and there, getting some from one and some from another, we generally get what we need when we need it.

"On the sales end, we are trying to profit by what we have learned in buying. We've hired a new man to start out with surveys on post-war products. As a result of our experience in war plants, we are working on the problem of distribution on a standard package basis instead of separate installations."

A 3-Point Program

Although there is some conflict of opinion in the hints provided by this small cross-section of purchasing experience, it seems clear that Purchasing Agents, if given the opportunity to advise their own management on the purchasing-sales relationship, will do well to counsel them:

1. To get their salesmen back on the old routes as quickly as possible, to pick up and cultivate the personal contacts on which business has been based in the past.
2. To supplement any advertising on promised postwar innovations with just as much concrete information as possible, in personal interviews and explanations of how these products may be applied.
3. Meanwhile, to have their salesmen make a special effort to give their old customers the kind of service—or, if that is impossible, the kind of explanations—that make for the preservation of good will.

Veeder-Root Remote Indicating Magnetic Counters flash up-to-the-minute reports on machine operation from plant to office, no matter how far away.

How Veeder-Root Counting Devices can help in the Government Campaign for CONSERVATION OF CUTTING TOOLS

Among the urgent "musts" in getting utmost service out of valuable cutting tools, WPB underscores *maintenance of proper speeds . . .* and *changing of bits before they become too dull.*

Veeder-Root Devices can count toward both these objectives. They provide the basis for an accurate check on whether rated speeds are being held constant. And they warn, in plain figures, of the approach of the end of an operating interval at which the tool should be ground.

Let us show you exactly how Veeder-Root Devices can help *you* to "Treat 'Em Right", on your machines. Drop a line in the mail today.

VEEDER-ROOT
INCORPORATED
HARTFORD, CONNECTICUT

AS YOU NEVER DROVE BEFORE!

Many a soldier owes his life to a commander who drove him to the utmost in battle—*never let him slacken for a single fatal instant!* And after the war, many a worker will owe his economic safety to a leader who drove him continuously for higher Pay-Roll allotments for the purchase of War Bonds!

Despite higher taxes and prices, the average worker still has more money than ever before—particularly on the basis of the *family* income. With others in the family earning, too, just let the worker 'figure it out for himself', and he usually will realize that *now* he can put more into War Bonds than he has been doing.

That's why the Treasury Department has set new quotas for the current Pay-Roll Allotment Drive—*quotas running about 50% above former figures.* These quotas are designed to reach the *new* money that's coming into the family income. Coming from millions of new workers . . . from women who never worked before . . . from millions who never before earned anything like what they are getting today!

The current War Bond effort is built around the *family* unit, and the Treasury Department now urges you to organize your War Bond *thinking*—and your War Bond *selling*—on the basis of your employees' *family* incomes. For details, get in touch with your local War Finance Committee which will supply you with all necessary material for the proper presentation of the new plan to your workers through your labor-management committees.

Today about 30,000,000 wage earners, in 175,000 plants, are buying War Bonds at the rate of nearly half a billion dollars a month. Great as this sum is, *it is not enough!* So turn-to today! Get this new *family income plan working!*

This Space Is a Contribution to America's All-Out War Effort By

PURCHASING

MANUAL FOR PROCUREMENT OFFICERS

Guide To Efficiency And Fair Pricing

TO enable all procurement officers to benefit by accumulated experiences, the Army Service Forces has developed and distributed a manual of procedure entitled "Pricing in War Contracts," the War Department announces. (A limited supply of these manuals is available. Requests for copies will be filled in order of their receipt.)

The manual is designed to aid Army contracting officers in maintaining efficiency and economy and material procurement without losing sight of the fact that their main job is to obtain all that is needed for war purposes, of the quality required and on time.

The manual was prepared under the direction of the Director of the Purchases Division, ASF. It contains many new suggestions to procurement officers as well as a general amalgamation of previously issued instructions.

The manual does not supplant or modify War Department Procurement Regulations or procurement instructions issued by the Army Air Forces or any of the technical services of the Army Service Forces. It is cast in the form of suggestions intended as a general guide to ways of obtaining prices fair and reasonable under all circumstances.

Procurement officers are instructed to "buy what is needed at close prices—i.e., at prices neither high or low enough to discourage increased production and operating efficiency, but rather at fair and reasonable prices calculated to encourage both."

The manual points out that sound methods of buying always have had a strong influence on production. It discusses in detail the various factors involved in price analysis which must be considered in contracting for goods at economical but fair prices. The levels of competing prices, the effects of sizes of orders, length of delivery schedules, degree of subcontracting and extent to which the Government supplies materials or facilities are among the important considerations raised and discussed.

Technical appendices on such subjects are included. These are to be enlarged as amendments to the manual if experience indicates such material will add still more to procurement economy and efficiency.

* * *

ELECTRONIC "CHEMIST" TO SPEED CHEMICAL RESEARCH

An electronic device called the "mass spectrometer" will soon accelerate wartime chemical research by freeing hundreds of highly skilled chemists from tedious but important production testing in synthetic rubber plants. This new instrument is faster and more accurate than a dozen top-notch chemists. It is a valuable laboratory tool for scientists seeking more powerful gasolines, new plastics and improved synthetic rubber. An average college student can be taught to operate the spectrometer in a few weeks.

Developed by 32-year-old Dr. John A. Hipple, physicist at the Westinghouse Research Laboratories, the electronic "chemist" swiftly and precisely analyzes many of the complicated gases formed in making butadiene, the principal ingredient of several types of synthetic rubber. In 15 minutes this spectrometer will dissect a complicated gas molecule a twenty-five-millionth of an inch long and can be arranged to automatically

(*Continued on page* 278)

SAFETY EQUIPMENT *for every hazard*

—every occupation—every industry

First essential of accident prevention, is adequate safety equipment at every danger spot. No matter what your hazard—Pulmosan has proven safeguards to meet it. Tell us your needs for prompt shipment.

PULMOSAN SAFETY EQUIP. CORPORATION

Dept. P., 176 Johnson Street, Brooklyn, N. Y.

TISSUE TIPS *by* **VICTORIA**

EAT AT JOE'S
CHARLIE'S GOOD EATS
CHARLIE'S GOOD EATS
CHARLIE'S GOOD EATS
EVERYONE GOES TO CHARLIE'S 'CAUSE HIS REST ROOMS HAVE VICTORIA!

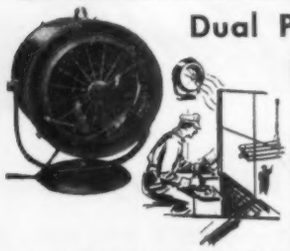
***Specify* VICTORIA TOILET TISSUES**

Single Fold, Double Fold or Black Core—for dependable quality.
Victoria Paper Mills Co., Fulton, N.Y. Craftsmen in paper-making since 1880.

4 Quick Ways

TO SOLVE INDUSTRIAL HEATING PROBLEMS WITH ELECTRIC HEAT

Electric heat can solve many heating headaches... independently of possible fuel shortages. Here are four simple and effective ways this versatile production aid can be put to work:



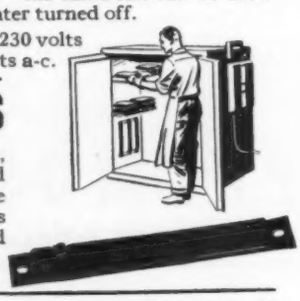
Dual Purpose *Fan-Type*

UNIT HEATERS

Use them anywhere—in shop offices, receiving and shipping rooms, crane cabs, assembly lines. Mount them in any position, on floor, wall or ceiling. Large-capacity fan and heating element quickly heats large spaces in winter. What's more—the same fan can be used for cooling in summer, with heater turned off.

Ratings: 2, 3 kw, for 115 and 230 volts a-c; 4, 5 and 7½ kw, for 230 volts a-c.

STRIP HEATERS



Quickly and easily installed, these strip heaters can be used in ovens, crane cabs, valve houses, pipe lines, process machinery, hot tables and countless other applications.

Convection-Type

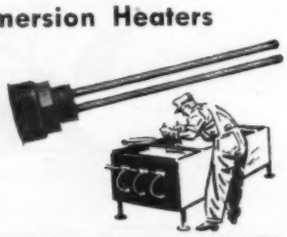
AIR HEATERS

This type solves heating problems in hard-to-heat, out-of-the-way places. Consisting of a series of strip-type heaters under a perforated iron cover, these heaters have long, dependable lives. Switch provides low, medium or high heat; thermostat control available for automatically maintaining desired temperature. Ratings: 1000 to 4500 watts; 115, 230 and other voltages; a-c or d-c; floor or wall-mounted.

"COROX" Immersion Heaters

A handy unit for heating water tanks, oil-tempering baths and process tanks of all sorts. Complete line available for all types of installations.

Standard Ratings: from .6 to 10 kw.



For complete information on these, or other types of heaters, call your Westinghouse office or write for Catalog 28-000. Westinghouse Electric & Mfg. Company, East Pittsburgh, Pa., Dept. 7-N. J-10248

Westinghouse

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

Industrial Heating

(*Continued from page 277*)

produce an autograph that tells the chemist the composition of the gas.

At present, certain analyses require from 15 hours to three days of painstaking laboratory work by five to ten skilled chemists. Others cannot be done at all even by other processes. Results attained by these tedious methods are much less accurate than the molecular "portrait" that comes out of the spectrometer.

* * *

COAL-OIL MIXTURES PROMISE LIQUID FUEL SAVINGS

Colloidal Fuel Successful In Steam Atomizing Burner

COLLOIDAL fuel, a mixture of pulverized coal and oil, can be used in many industrial boiler plants which were designed to burn fuel oil, if "careful study and sound engineering practice" are employed in each case, the Bureau of Mines reported to Secretary of the Interior Harold L. Ickes, following a one-month trial of colloidal fuel in a boiler plant of the Atlantic Refining Company at Philadelphia, Pennsylvania.

In the tests, a mixture of 40 per cent pulverized bituminous coal, around 95 per cent of which passed through a 230-mesh sieve, and 60 per cent No. 6 (Bunker C) fuel oil, was fed to a furnace using a steam-atomizing type of burner. The test was run as part of the regular plant routine, with existing equipment which was operated by the usual company boiler plant employees. Company engineers cooperated with the Bureau in the tests.

No difficulties arose in burning the colloidal fuel in the steam-atomizing type of burner used, Bureau engineers informed Secretary Ickes. The flame responded smoothly to changes of boiler load and to variations of the amount of air used for combustion. In general, the troubles from the ash of the coal in the furnace were less than anticipated.

Bureau engineers believe that the amount of fuel oil normally consumed by commercial furnaces would be reduced one-third if colloidal fuel is substituted. Their research at the Atlantic Refining Company was prompted by the acute fuel oil shortage prevailing in certain parts of the country. A total potential saving of 15 million bbl. of oil a year by colloidal fuel is estimated by the Marketing Division, Petroleum Administration for War.

In the tests just completed, the Bureau engineers said that more power generally was required to pump the colloidal fuel and, in general, pump capacities probably would be lower when handling the mixture of coal and oil. Because the mixture is abrasive, a varying amount of erosion probably will occur in pumps and burners, they added.

"The amount of settling out of coal from the oil depends on several factors, such as the temperature to which the fuel is heated, the fineness of the coal, and the movement of the fuel," they explained. "Clogging of heaters, screens, meters, and control valves must be watched. In general, none of these difficulties proved serious, with operating routine properly organized. No boiler shutdown occurred from operating difficulties while using the colloidal fuel."

These tests show, the Bureau of Mines reported, that this emergency fuel could be the practical solution for many individual cases where the oil supply has been decreased. As with all engineering problems, decisions

(*Continued on page 279*)

(*Continued from page 278*)

as to its use should be made as a result of careful study based on sound engineering knowledge and practice.

If colloidal fuel came into wider use during the emergency, it could be prepared in central mixing plants and delivered to consumers as fuel oil now is delivered. The substitution of a mixture of coal and oil for oil-burning furnaces of the East Coast would be particularly important because less oil would have to be transported to meet needs of the regoin, the Bureau commented.

THINGS TO REMEMBER WHEN USING TODAY'S SOLDERS

TODAY'S solder decidedly differs from pre-war solder, and so should soldering technique. Previously solder was composed of tin and lead in about 50-50 ratio; today, except for certain applications, solder contains not more than 20 per cent tin, with perhaps small amounts of silver, bismuth, antimony or tin. Today's soldering technique calls for a hotter soldering iron, and attention to certain details. How to make better soldered joints has been explained in a communication issued by the metallurgy committee of the General Electric Company, which says:

1. Keep your work clean. Guard carefully against varnish, grease, oil, dirt, rust, or corrosion products. They prevent the flux from acting and the solder from alloying with the parent metal.

2. Keep in mind that the purpose of the soldering iron or torch is not to melt the solder but to heat the work until the solder will flow when applied to the work.

3. Keep the soldering iron clean and, to have the

(*Continued on page 280*)

CARTS • TRUCKS • WHEELBARROWS • PORTABLE EQUIPMENT IN MODERN INDUSTRY

WHEELS WITH OR WITHOUT RUBBER TIRES FOR

The WHEELS INDUSTRY NEEDS

Keep your plant MOBILITY at top peak by mounting your conveyances and portable equipment on French & Hecht Industrial Wheels. Available in Spoke • Cast • and Pressed types with pneumatic, puncture-proof cushion or solid rubber tires (steel tires where desired). These round, true, sturdy wheels assure uninterrupted flow of materials at required speeds without noise or damage to floors. A wide range of types and sizes to suit your requirements. We invite your specifications.

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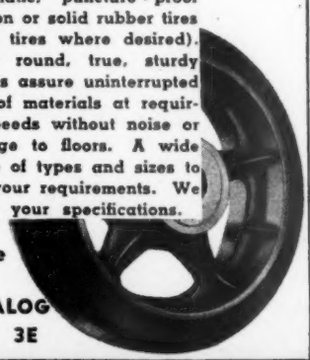
Soon, we believe, rubber tires will again be available to general industry. Even now, for those who can qualify, we can furnish rubber tired wheels. If your future plans include the use of rubber tired wheels, we will gladly submit preliminary recommendations.

Write for CATALOG No. 3E



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WHEEL BUILDERS SINCE 1888

DU-LITE DU-LITE
STEEL COLORING PROCESS

DU-LITE . . .
leads again

The most important recent improvement in the black oxide process for steel finishing is the Du-Lite method of removing foreign material from the processing bath and keeping it clean.

The Du-Lite Clarifier can positively control the accumulation of sludge in the bath, either in the form of a solid or in suspension. Uniformly high quality finishing is impossible where sludge is present.

Our guarantee of freedom from this trouble is one reason why leading manufacturers look to Du-Lite for the right black oxidizing process.

Our representatives are located in the principal industrial centers and are available for consultation without obligation. Write the nearest office.

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MIDDLETOWN, CONNECTICUT

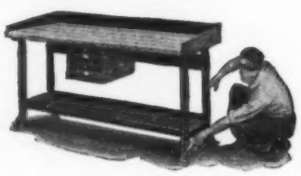
IT IS OUR BELIEF
WE HAVE THOUGHT OF EVERYTHING YOU WOULD WANT IN A WORK-BENCH

Fig. 928 "Hallowell" Work-Bench Laminated wood top. Drawer is extra Pat'd. & Pat's. Pend'g.

HALLOWELL
SHOP EQUIPMENT

In the "Hallowell" line we have developed 1367 different ready-made work-bench combinations from which can be selected a type to meet almost any shop requirement. With this broad selection to choose from you can save time and money, too, by buying "Hallowell" instead of fussing around and building your own work-benches. Our Shop Equipment catalog will help you choose . . . send for a copy.

Choice of five leg heights and widths to meet your particular requirements.



Strong flanged and ribbed leg construction insure absolute rigidity without costly bolting to floor.

Work-Benches can be furnished with one, two or three drawers, with locks and keys.

Tops may be of smooth, laminated wood, Masonite or steel if advantageous.

Where priorities do not permit the use of steel shop equipment, "Hallowell" *Duration Type* Work-Benches of Wood are now available.

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Over 40 Years in Business

(*Continued from page* 279)

quickest possible heat transfer from the iron to the work, have the tip designed actually to fit against the work.

4. Investigate different methods available for doing the work—hotter electric iron, high frequency, or carbon resistance soldering tools may do the job better.

5. Design your joints to have 0.003 to 0.005 in. solder thickness, and so that the two parts overlap. Lap or seam-type joints are better than butt-type joints. Have the solder fill the seam completely. Heavy fillets add little strength to the joint, and waste solder.

6. Don't hand a new solder, a flux, and a soldering job to a workman and expert a perfect job the first time. Let him get the "feel' of the new material. Don't give up a new solder after one unsuccessful trial—the chances are your technique is not what it should be for that particular solder.

SALVAGING CRITICAL MATERIALS

by H. M. MacDOUGAL
Chief of P.U. Unit, I.S.B., Salvage Division, W. P. B.

BEFORE we entered the war, we had declared ourselves the arsenal of the democracies and in that capacity immediately encountered tremendous demands on our raw materials and industrial skills which resulted in shortages of materials we thought were most plentiful. We thought it couldn't happen here, but this position became intensified after Pearl Harbor and steadily increased for a period of nearly two years. Because we had always had a profusion of essential materials and could readily obtain those which we did not produce ourselves, in addition to having plenty of manpower, our habits became wasteful. We did not protect our supply of secondary materials. As the shortage became imminent, we began to regret that we had shipped so much of our scrap to the Axis nations that had become our enemies. However as we analyzed this condition, we found that the amount of such materials that had been shipped to them was extremely insignficant compared with our potential capacity to produce them. Our new industrial philosophy became one of conservation. I know at first it was a mystery to me why the shortage of so many metals such as iron and steel, cooper, aluminum, magnesium, etc., became so acute so quickly, but I soon learned the answer in the form of brief but very general statistical information which tells the story very well.

Relative to metals in World War 1, the metal required per man in the armed forces was 94 pounds. In this war, it is 4,900 pounds. Thus we compare 100 pounds per man with nearly 2½ tons per man. Mechanized divisions, bigger, better and vast numbers of planes, much greater firing rate in guns, 120%, greater numbers of men in our armed forces and lend-lease in great quantities to our allies are the reasons. To produce these things, men, machines, material and movement are required together with the seemingly endless list of other items of combat and housekeeping required by our already great and steadliy growing army and navy. The most critical factor of these four items is materials.

We must nurture them by using, reusing and reconditioning them and extend their usefulness by re-application.

Because of the absolute necessity of conservation of critical materials, scrap and salvage have taken on a

(*Continued on page* 282)

THE 12 HOUR SHIFT NEEDS *BALANCED* HAND TOOLS

★ If you are lucky enough to have a set of BALANCED Fairmount Tools, hang on to them—give them the best of care—they are worth it. If you don't have any, then get a set at the first opportunity and see what a difference proper tool balance can make in how you feel at the end of a 12 hour war time shift.

Hand Tools • Special Tools • Forgings

The FAIRMOUNT TOOL & FORGING CO.

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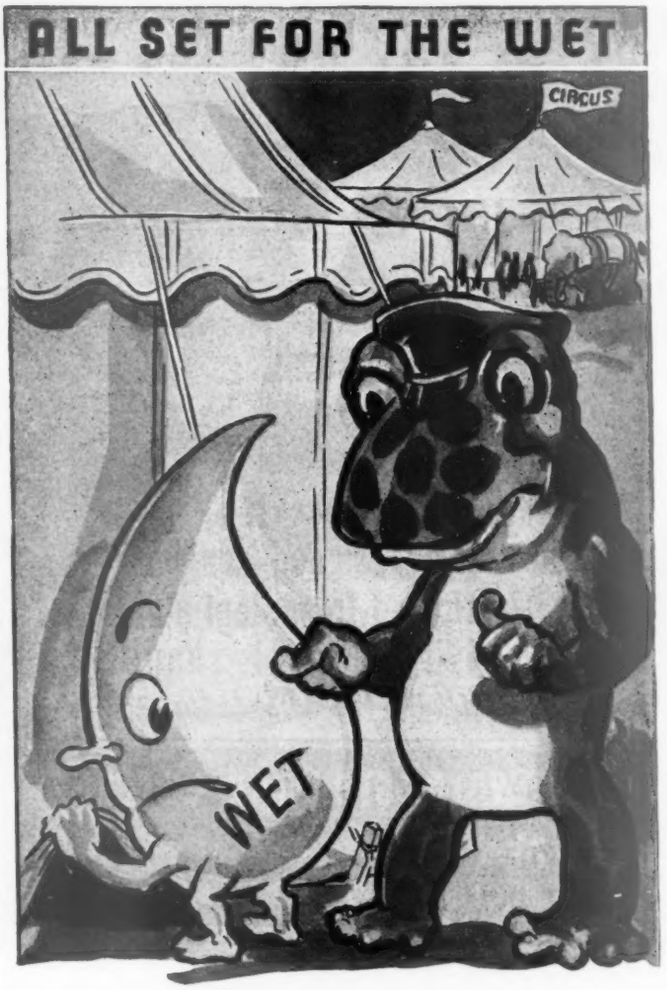

WET CAN'T SNEAK IN

If you want to keep WET out, rely on Frog Brand. The famous Frog Brand Trade-Mark stands for top quality in oiled work clothing of all types. Even though only a part of Sawyer's Frog Brand production lines can now be devoted to civilian garments, nevertheless in industry and commerce from Coast to Coast, men are relying every day on Frog Brand garments to keep "The Wet from sneaking in."

THE H. M. SAWYER & SONS CO.
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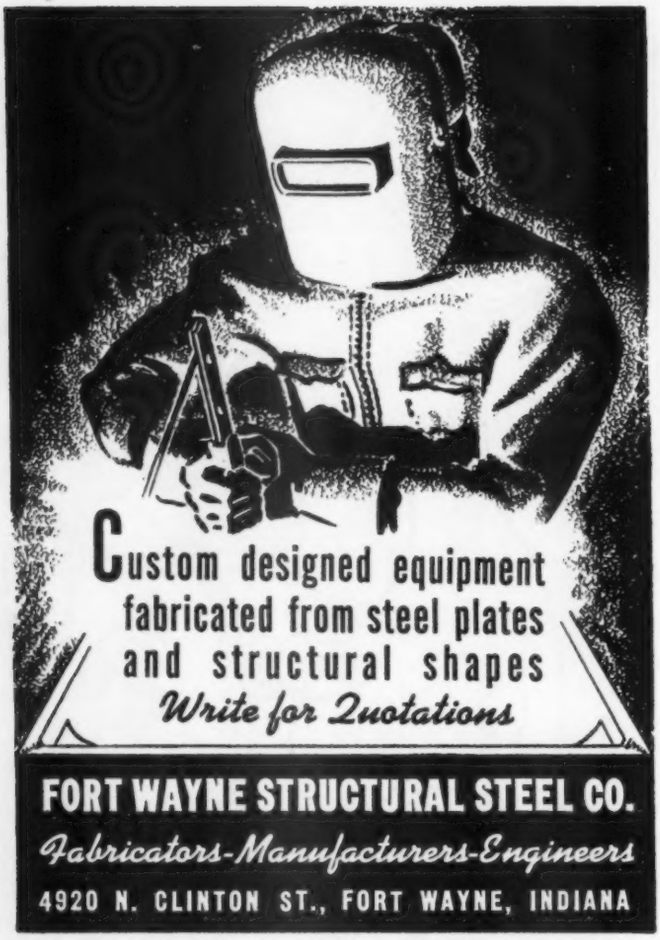
Sawyer's

FROG BRAND OILED WORK CLOTHING



Facts about ANTI-FRICTION
BEARINGS

Anybody who reads this handy little volume will have a clearer understanding of what bearings do, how they function, all their different types, and how they are applied. It is "MUST" reading for those who have anything to do with selecting, using or servicing bearings. No "selling" in it—just 32 pages of simple common sense, with more than a hundred helpful diagrams, phantom drawings and photographs. Handy pocket size.

A copy will be sent you on request

AHLBERG
BEARING COMPANY
Manufacturers of (CUP) Master Ball Bearings
3039 West 47th St., Chicago, Ill.

(*Continued from page 280*)

new significance. Scrap, instead of being a nuisance has become a national treasure, something to be sought out—collected—and returned to production channels. Scrap sources are mines above the ground and must be disgorged of every particle of strategic material they contain.

Copper, with its alloys brass and bronze, is the number one critical material this year. It is now estimated that all known sources of copper production, and of copper, brass and bronze scrap will not produce enough of the critical metal to supply our war and essential civilian requirements as long as the war lasts. However, we cannot relax our vigilance on iron and steel scrap, nor on non-ferrous metals other than copper and its alloys.

Because the so-called "free" materials and equipment have for the most part been moved we now have a job of digging for the dormant scrap.

Dormant scrap is defined as obsolete machinery, equipment, materials in stock, dies, molds, jigs, fixtures, etc., which are incapable of current or immediate future ure in the war production effort because they are broken, worn-out, irreparable, dismantled or in need of unavailable parts necessary to practical re-employment.

"KNOW HOW" OF FORMED PLASTICS

Laminated Plastics Can Be Fabricated By Processes Peculiar To Metals

POST-WAR industrial and consumer applications of what for a better term is designated as "formed sheet laminated plastics" will come in the wake of the victory celebrations, those in "the know" at the Formica Insulation Company, Cincinnati manufacturers of laminated plastics have disclosed.

Increased interest in "forming" of laminated plastics has been noted by technical and post-war marketwise planning departments alike.

The process involved in "formed" plastics is simply this: finished sheet is heated and then bent immediately into shape to make curved or formed parts, the designed shapes having retention qualities that are fixed, stable and permanent.

The sheet to be formed is heated by placing in an oven, immersed in a hot liquid or radiated by infra red. This process takes about one minute. When hot, the sheet is placed immediately in a wooden form and bent to shape. The shapening process requires only a few minutes until it is set. Then the finished piece is removed from the form.

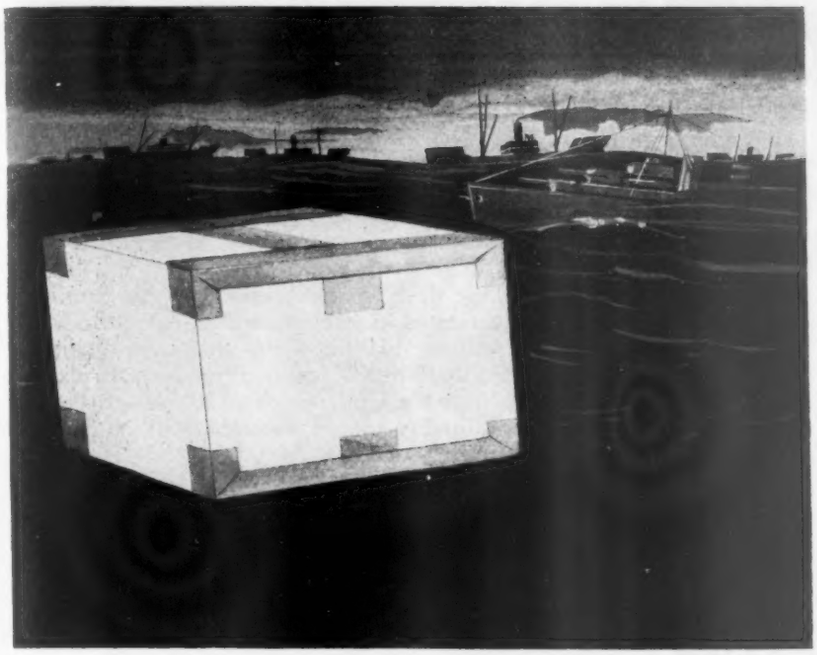
The forming processes, are envisioned to open limitless uses in consumer and industrial applications.

Simple bending has been done for many years in a limited way as all standard grades of laminated sheet will withstand restricted bends. Formed sheet for electrical parts has been produced of linen base sheet. Paper base translucent sheet, as another example, has had wide application for lighting fixtures and collateral uses, as its ability to form has allowed production of angles, bends, tubes, etc.

Sink tops with back splashboard combined have been fabricated in a single sheet, this process requiring the simple bending of a sheet with a decorative wear-resistant surface. This process involves bending a flat sheet to a right angle, with the horizontal portion forming the sink-top and the vertical section, the back-splash board.

With the advent of the war, production of other formed parts was speeded as engineering "know how"

(*Continued on page 284*)



DELIVERING THE GOODS

Supplies and instruments of war are worthless unless they reach the front. Rugged SAFETEX GUMMED TAPE is doing its part, every hour, to deliver the goods. Sealed with SAFETEX TAPE every carton is bound to get there, securely and undamaged.

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SAFETEX TAPES...

Regular SAFETEX kraft paper sealing tape.

Regular SAFETEX tape on waterproof paper backing.

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WHAT TO DO ABOUT ACCUMULATIONS OF PAINT, LACQUER, NITROCELLULOSE FILM, GREASE, OIL, GLUE AND OTHER RESIDUES?

ANSWER:

REMOVE THE SPILLAGE BEFORE IT SPILLS.

APPLY TURCO DURAMASK

TURCO DURAMASK forms a white, light reflecting durable water-soluble coat that dries to a hard surface in 30 minutes. Easily painted on and may be flushed or mopped away, carrying with it all accumulations of waste. Eliminates dangerous solvents and wire brush scrubbing. Harmless to all reactive metals and to the skin. DURAMASK renders old cleaning methods obsolete.

Consult your nearest Turco Service Specialist. His skill in solving Cleaning Problems is at your command. Without charge, of course.

Where Duramask Serves

In Paint Spray Rooms • Machine Shops • Grease Racks • To Protect Conveyor Belts From Spillage • Aircraft "Dope" Rooms • As a Protective Mask for Plant Walls and Floors • As a Shop Coat for Temporary Protection of Materials.

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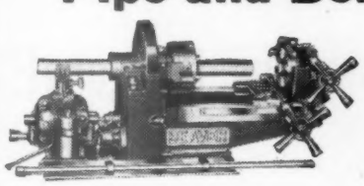
SERVICE MEN AND WAREHOUSE STOCKS IN ALL PRINCIPAL CITIES

The A-B-C of Pipe and Bolt Machines

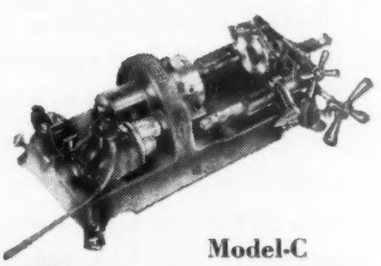


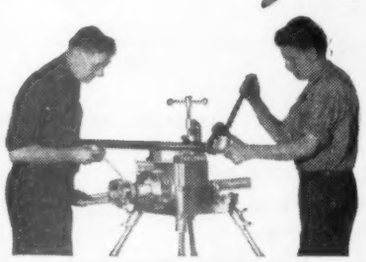
Model-A

A high-speed heavy-duty deluxe Pipe and Bolt Machine. Range ⅛ to 2-inch—up to 12-inch with geared tools and drive shaft. Bolts, ¼ to 2-inch. Wt. 415 lbs. Ask for Bulletin-A.

Model-B

A compact utility Pipe and Bolt Machine combining many features of Model-A with the easy portability of Model-C. Range ⅛ to 2-inch—up to 8-inch with drive shaft and geared tools. Bolts up to 1½-inch. Weight 280 lbs. Ask for Bulletin-B.





Model-C

A sturdy little Power Unit

Converts Hand Pipe Tools into Power Tools from ⅛ to 8-inches. Threads 8-inch in 6 minutes. Threads bolts up to 1½-inch. Equipped with automatic chuck wrench ejector—a safety feature. Two men can use it at the same time without interference. Easily portable—weighs about 150 lbs. Write for Bulletin-C.

Also a complete line of hand tools.

BEAVER PIPE TOOLS

1043 GROW AVE., WARREN, O.

"We'll take the RISKS"

"...if you'll send us the guns!"

Our boys will gladly risk their lives for Freedom. All they ask of us back home is that we send them the guns, shells and equipment—and send it *fast*. They'll do the rest. So let's keep production zooming along at top-speed. One way to help speed production is to use Garlock Packings, Gaskets and Oil Seals—they give long, dependable service and help you avoid frequent shut-downs.

THE GARLOCK PACKING COMPANY, PALMYRA, NEW YORK
Manufacturers of GARLOCK Packings, Gaskets and KLOZURE Oil Seals
In Canada: The Garlock Packing Company of Canada Limited, Montreal, Que.

GARLOCK

(*Continued from page 282*)

in the laminated plastics field went "all out" in its efforts to apply ingenious applications for the victory effort. Wing tabs, for example, were made by wrapping a single sheet around a form. This formed sheet, fastened to the necessary ribs and bulkheads completes the finished piece.

A spurt in the "formed" applications came from West Coast aircraft manufacturing companies producing planes for war uses. These aviation applications illustrated many superior properties.

Among these developments, notably is an ammunition chute fabricated of laminated plastics with adaptabilities and wearing qualities better than the previously-used metal chute. The chutes made of formed plastics have demonstrated quieter operation and also have the advantageous quality of not *flowering* out or petaling when fractured.

Most recent advances in the "formed" process is in production of materials with the ability to be drawn into compound curves. Sheet is now made in a canvas grade which can be molded into cup or otherwise "drawn" shape. Even spinning has been accomplished.

The "formed" process is in contrast to the older molding method of producing shapes. In the conventional pre-war method, one piece is molded at a time, utilizing a costly machined steel mold. By the new method sheets are pressed in multiple presses where 80 large sheets can be made in one cure. These cured sheets are then cut into desired shape and "formed" by the inexpensive, quick, forming process.

"Thermaelastic" has been suggested as the term describing the forming characteristic of plastic laminates.

The future of this process is unlimited, Formica engineers believe since plastics are demonstrative of such versatility that they can be punched, drawn, extruded, spun and bent by processes hitherto peculiar to metals.

Boxes, tubes, channels, dishes, moldings and multi-shaped forms are now available in "formed" plastics. Production can be geared for low-cost applications whenever the characteristics of plastics are sought for the numerous uses in a post-war market.

CHROMIUM PLATING INCREASES CYLINDER LIFE

RECENT removal of censorship restrictions, has permitted the release, by the American Hammered Piston Ring Division of Koppers Co., of an outstanding example of the "tremendous trifles" which are playing such in important part in American war successes.

By plating airplane piston rings with .005″ of chromium (about the thickness of a sheet of book paper) on the cylinder contacting surface, our fighting aircraft have been able to fly five times as many hours between engine overhauls, even in Africa where the abrasive-like dust of the desert apparently has no ceiling.

Tightly locked on special arbors, the piston rings are lowered, by an overhead traveling crane, into one of a long series of tanks. Said to be the largest chromium plating department in the world, the operation is based upon the Van der Horst Process, which American Hammered pioneered in this country. While experimental work pre-dates the war, the present department with its block-long line of plating tanks and generators, was planned immediately following Pearl Harbor, and has been in actual operation for over a year.

The "chrome" on airplane rings is not the bright, hard, plating used on automobile bumpers. Instead, it is

(*Continued on page 286*)

PAGE for WIRE

Today's PAGE wire production goes wherever the needs of war direct it—as it should be. . . . But you will find it good business to discuss with PAGE now—or any time—your plans for after-war production.

GENERAL WIRE

Spring Wire, Bond Wire, Telephone Wire, etc.

SHAPED WIRE

Stainless Steel. Carbon Steel. Half-round, oval, triangle, hexagon, octagon, flat, keystone, etc. Diameters to ⅜". End section areas to .250 sq. inch.

WELDING WIRE

Stainless Steel in analyses and diameters of such broad range that it is easy to choose from them the correct electrode for any Stainless Steel welding. A complete line of electrodes for welding all other steels. PAGE welding electrodes are handled by your local PAGE Distributor.

PAGE STEEL AND WIRE DIVISION

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In Business for Your Safety

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ROPER ROTARY PUMPS
with Pan American
AROUND THE WORLD...

The transoceanic Clipper... world's largest long-range transport.

That Pan American is able to serve the United Nations throughout the world, is due in large measure to the fourteen years of pioneering and scientific progress which have gone into the development of its facilities.

To meet the exacting demands of this great air transport system all mechanical equipment must function efficiently . . . must be dependable . . . must require a minimum of servicing.

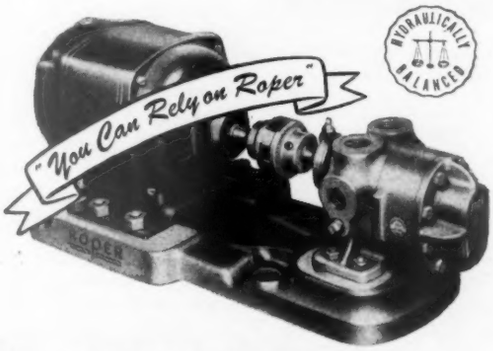
Roper Rotary Pumps meet these requirements . . . that's why they are the choice of Pan American. The simple principle of Roper Pumps . . . only 2 moving parts . . . equal size pumping gears operating at the same speed . . . assures quiet and smooth operation with less vibration and a minimum of wear.

IN BRAZIL

IN AFRICA

AT LA GUARDIA FIELD HANGAR

ON FIRE FIGHTING UNITS



Write for Catalog 1037

A summary of factual information on pumps and pumpinging problems.

GEO. D. ROPER CORP., ROCKFORD, ILLINOIS

ROPER Rotary PUMPS

ANOTHER SPECIAL BY PROGRESSIVE

QUALITY PROMCO BRAND

FOR VICTORY BUY UNITED STATES WAR BONDS AND STAMPS

For special heads, threads, finishes, etc. — on fastenings of any metal or alloy adapted to cold-upset—depend on Progressive. 25,000,000 is our weekly output; customer satisfaction our daily achievement.

The PROGRESSIVE MFG. CO.
TORRINGTON · · · CONNECTICUT

(*Continued from page 284*)

known as "Porus-Krome"—gentle on cylinder walls, permitting ample lubrication and yet resisting wear to an extent that, if applied to industrial engines in post-war days, has long-life potentialities beyond any piston ring set-up ever known in the trade.

★ ★ ★

PACKAGING A VITAL JOB

A TIME-CHECK of the travels of a battery of anti-aircraft artillery shows the speed and efficiency with which weapons are being supplied to our troops.

A special report of Brig. Gen. Julian S. Hatcher, Chief of the Field Service Division of the Ordnance Department, Army Service Forces, recently traced an aircraft battery's route from Ordnance depots in the United States to the front lines overseas.

The shipment covered a battery of anti-aircraft artillery, complete with vehicles, spare parts, cleaning equipment, fire control directors with their multiplicity of watch-like mechanisms and 16,000 component parts, telescopes and range finders with precision glass parts, and ammunition with fuzes that can be adjusted to a fraction of a second. This equipment was prepared and packaged for shipment at Ordnance depots.

On its route across the country by rail and over the ocean, the shipment went through temperature ranges from 10 degrees below zero to 110 degrees above. The battery had to be ready for instant service on arrival in the combat zone.

Because of the skillful way in which depot workers did their job of packaging and shipping, the anti-aircraft

(*Continued on page 288*)

★ ★ ★

GUN BARREL PRODUCTION

★ INCREASED FROM 6-30 PER DAY TO A STEADY 90

★ 2 LARGE HONING MACHINES RELEASED FOR OTHER OPERATIONS . .

★ FINISHED HONING OPERATIONS

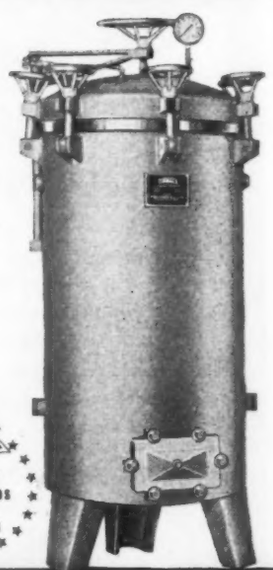
★ REDUCED FROM 30% TO 1% . . . .

★ MAN POWER SAVED . . . .

BOWSER

Guns . . . and more guns, tanks, planes, boats! That's what our fighters over there need from us over here to hasten the day of "unconditional surrender". Speaking of guns, here is the true experience of a producer of gun barrels. Production ran from an uncertain six to thirty per day . . . Many of the broached barrels required further honing . . . some scratched so badly that they were rejected. Installing larger machine sumps . . . use of other type filters were tried but without success. A Bowser broaching oil filtration system was installed . . . eliminating the need for three men yet with the accompanying benefits shown at left.

If you have a cutting, broaching, grinding, honing, threading or other similar problem, call in a Bowser man. Perhaps he can help you to get more over there . . . quicker!



ARMY NAVY Buy WAR BONDS and STAMPS

S. F. BOWSER AND COMPANY, INC.
FORT WAYNE, INDIANA

LIQUID CONTROL SPECIALISTS - SINCE 1885
METERING · DISPENSING · STORING · LUBRICATING · FILTERING · DISTILLING

ACCURACY ★ UNIFORMITY

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SCREW MACHINE *Products*

GAGED TO THE NEED OF MODERN INDUSTRY

SIZES UP TO 1¼" — ALL METALS — SPECIAL EXPERIENCE IN ALUMINUM

THE NEWTON MANUFACTURING CO., PLAINVILLE, CONN.

HOW'S THIS FOR SAFETY AND SERVICE?

12 TIMES THE WEAR PLUS MORE PROTECTION

★ **Surety's remarkable SURESEAL synthetic gloves, aprons, and sleeves set new endurance records. Actual use tests and testimonials give SURESEAL up to 12 to 1 longer life over former rubber or synthetics used—and defeats dermatitis, rubber allergies, and other costly hand hazards. Write Surety for descriptive literature and availability information now.**

Largest and Original Producers of Synthetic Gloves

THE *Surety* RUBBER COMPANY

CARROLLTON, OHIO

Outside of Helping "Grind the Axis"—

We Have No Axe to Grind!

* To meet military needs for an ammunition box sealing material, a newly developed Fel-Pro material is being used. In addition to rubber-like characteristics, this material has the advantage of resisting poison gas seepage.

★ ★ ★ ★

Put It Up to FEL-PRO for solutions to problems involving GASKETS, MOULDING, STRIPPING, MECHANICAL PACKING and other types of Sealing Materials.

Felt Products Mfg. Co. does not limit itself to the manufacture or use of any one kind of sealing material. Therefore, we have no reason for promoting the sale of any particular type of Gaskets, Stripping, Moulding or Mechanical Packing. Our only consideration is "What material will best meet the needs of this sealing job?" — And if there is no such material, we try to develop one.

For example, to meet certain industrial sealing requirements put up to us, Fel-Pro developed such materials as Lignoflex (highly resistant to petroleum products, strong chemicals and high compression.) See the complete range of Fel-Pro sealing materials.

Write for Your Copy of FEL-PRO Material Sample Folder

Contains an actual sample of each of 36 Fel-Pro Sealing Materials; also technical data and application suggestions. If none of them meets your needs, consult Fel-Pro's Special Development Staff.

Put it up to FEL-PRO

FELT PRODUCTS MFG. CO.

1514 CARROLL AVENUE, CHICAGO, ILLINOIS

Rust
Can't Touch
HARPER
BOLTS
HARPER Fastenings resist rust, corrosion, salt laden air and other deep sea troubles. They're made of non-ferrous and stainless alloys. Today they are doing Trojan duty on battle ships, cruisers, aircraft carriers, PT boats, landing boats, submarines and many other types of vessels.
Because they are rust and corrosion resistant, Harper fastenings withstand severe conditions in the chemical, food, utilities and numerous other industries. In the proper alloys they are non-magnetic, non-sparking, repeatedly removable and have other sterling properties.
4320 STOCK ITEMS
. . . of bolts, nuts, screws, washers, rivets and accessories in the non-ferrous and stainless alloys.
THE H. M. HARPER COMPANY
2606 Fletcher Street • Chicago, Illinois
BRANCH OFFICES: 45 West Broadway, New York City 7; 1617 Pennsylvania Blvd. Philadelphia 3; 332 I. N. Van Nuys Bldg., Los Angeles 14; 2nd National Bank Bldg., Houston 2, Texas; 800 Broadway, Cincinnati 2, Ohio; 739 N. Broadway, Milwaukee 2, Wis. Representatives in Principal Cities.
HARPER
EVERLASTING FASTENINGS
BRASS • BRONZE • COPPER
EVERDUR • MONEL • STAINLESS

(*Continued from page* 286)

battery with its complex mechanisms arrived in perfect condition.

The total elapsed time from leaving the manufacturers, through the Ordnance Field Service Depot, into the hands of the troops and until the time the first shell was actually fired on the enemy was 23 days, 4 hours, and 20 minutes.

* * *

HOW TO SAVE TIRES

Subject Matter for Timely Bulletin

STRICT observance of the national 35-mile speed limit offers the greatest promise of keeping the country's cars rolling for another year, the Public Roads Administration of the Federal Works Agency concludes in a forthcoming report on a four-year investigation of passenger car tire wear and tire failure.

Tires wear out as much as four times as fast at 65 miles per hour as at 35 miles an hour and speed is the most important factor determining the rate of tire wear, the study, a cooperative research project conducted by the Engineering Experiment Station of Iowa State College and the Public Roads Administration, revealed.

In listing speed as the most important factor in determining the rate of tire wear, the investigators noted that on the basis of relative wear, tire mileage at 65 m.p.h. would have been about 18,700 miles, compared with 56,500 miles at 35 m.p.h., and 69,500 miles at top cruising speed of 25 m.p.h.

Important results and conclusions of the investigations included:

Variations in car speed caused greater variations in rate of tire wear than did variations in braking, acceleration, type and condition of road surface, tire inflation pressure, or in any other form of the factors investigated.

The rate of tire wear on concrete pavements at a nominal speed of 65 m.p.h. was four times that at a nominal speed of 25 m.p.h.

The greatest change in tread wear with change in speed was observed on the most abrasive surfaces on which wear rates at 65 m.p.h. were as much as four times those at 35 m.p.h.

The least variation of wear with speed was observed on bituminous surfaces sealed with thin coatings of asphalt or covered with moderately soft limestone chips held in place by asphalt. The rate of wear on these surfaces at 65 m.p.h. was almost double that at 35 m.p.h.

In "stop-and-go" tests simulating city traffic conditions, the rate of wear was seven times that in normal driving on rural pavements at a uniform speed of 25 m.p.h.

The average rate of wear of tires used regularly on city streets was from two to three times that of tires used on rural pavements at 45 m.p.h.

The rate of wear on dry pavements was approximately double that on the same pavements when wet.

Wheels out of line create a continuous braking effect which in extreme cases will cause tires to wear at ten times the normal rate.

Rate of wear was affected only slightly by variations in air temperature. On gravel roads the rate was greatest in the summer months but on concrete and bituminous surfaces the highest rate was observed on dry surfaces during the winter.

Tires on rear wheels wore from 30 to 100 percent faster than those on front wheels. Those on the right

(*Continued on page* 290)

Vascoloy
RAMET
T.M. REG. U.S. PAT. OFF.

LEADING THE INDUSTRY
IN CARBIDE TOOLS
SINCE 1930
DIES
TANTUNG CUTTING TOOLS

VASCOLOY-RAMET CORPORATION
NORTH CHICAGO, ILLINOIS
DISTRICT SALES AND SERVICE IN PRINCIPAL CITIES
In Canada: Carbide Tool & Die Company
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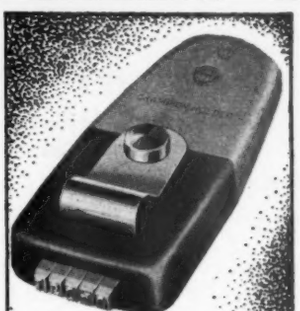
THE SUPERIOR TANTALUM-TUNGSTEN CARBIDE TOOLS

STAMPING
MULTIPLE CHARACTERS

with Matthews
'Champion' HOLDER

Made for hand stamping or press use... Matthews 'Champion' Holder can be used for 90% of all heavy or medium duty marking applications. Type changing is amazingly fast... marking is clean cut and in alignment. Write for Catalog 146-A for full particulars.


FOR HAND STAMPING

JAS. H. MATTHEWS & CO.

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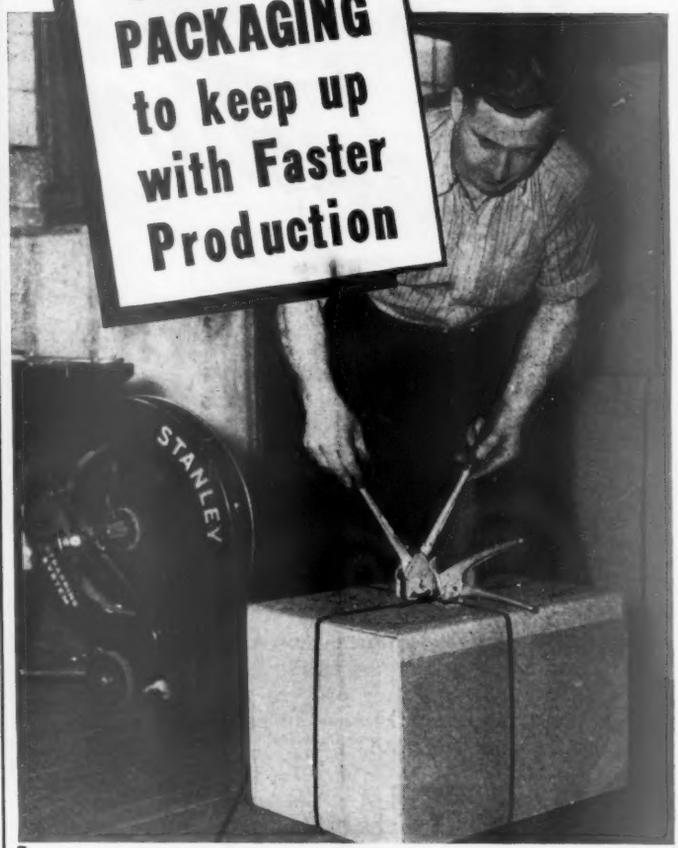
SPEED UP PACKAGING to keep up with Faster Production



Record production to meet war orders puts a heavy extra load on the shipping room. To make sure packaging moves as fast as production, many plants have put Stanley Steel Strapping equipment on the job.

Reducing shipping room man-hours per unit is only one advantage of Stanley Steel Strapping. It gives any package complete protection against the punishing treatment so often met on today's overworked carriers. It also keeps package weight and bulk to a minimum, saving valuable cargo space without sacrifice of strength.

The Stanley Steel Strapping System includes tools, reels, and accessories for every purpose,—everything you need for fast, dependable application. Write for details. The Stanley Works, Steel Strapping Division, New Britain, Connecticut.

PROMPT SHIPMENTS to War Production Plants

1843 STANLEY 1943

STANLEY
STEEL STRAPPING AND
CAR BANDING SYSTEMS

LITTLE THINGS INSURE *Big Production*

● Justrite Safety Products keep America's might a-building by preventing careless fires along the production lines. They prevent work stoppage — lower insurance rates — speed victory. Put them to work for you!

JUSTRITE OILY WASTE CANS

The sensible way to store oily waste and other 'flammable materials without fire hazard. 24 gauge galvanized sheet steel, double seamed and soldered. Foot lever for easy opening — automatic closing. Approved, inspected and individually numbered and labeled by Underwriters' Laboratories, Inc. 4 sizes, 6 to 14 gallons.

JUSTRITE Safety FILLING CANS

For handling gasoline and other 'flammable liquids which must be poured into fuel tanks, etc., with minimum fire risks. No splashing, spilling or waste. Sturdy 24 gauge steel body, baked enamel finish. Flexible metal spout. 20 quart size. Approved and listed by Underwriters' Laboratories, Inc.

JUSTRITE SAFETY CANS, similar to above but without flexible spout.

Twin-Bulb ELECTRIC LANTERNS, ideal light for watchmen, guards, and general black-out use around factories.

Don't delay. Ask your jobber today, or write for catalog and prices.

JUSTRITE MANUFACTURING COMPANY
2091 N. Southport Avenue, Chicago, Illinois

JUSTRITE *Safety Products*

SAFETY CANS · FILLING CANS · OILY WASTE CANS
APPROVED SAFETY ELECTRIC LANTERNS

(*Continued from page* 288)

wheels wore 100 percent faster than those on the left wheels.

The switching of all tires, including that on the spare wheel, from one wheel position to the next around the car every 2,000 miles is recommended as a means of equalizing tire wear.

Tire wear on curves when speeds cause tires to "scream" was more than 10 times the wear when speeds did not develop side friction.

The average life of 10 tires tested on concrete pavements was 36,651 miles. On gravel roads the average life was 23,160 miles. These and other test tires accumulated mileage more rapidly than do those on the average passenger car and therefore under more favorable conditions as to age of rubber.

Tests of a set of tires with recapped treads made of 95 percent reclaimed rubber, indicated a life after recapping of 14,000 miles if speed is restricted to 35 m.p.h.

Increase in rate of wear because of age was less than 25 percent for ages up to three years. Effect of age on wear was twice as great for rear tires as for front tires.

In 132,000 miles of driving on gravel roads, there were 98 punctures as compared with a single puncture on concrete roads for the same mileage, and one puncture on bituminous roads in 72,000 miles.

Many thousands of tire-miles are lost when tires fail because of avoidable damages long before the treads are worn smooth. Among avoidable damages are abnormal tread wear and damage caused by neglected cuts and punctures, stone bruises and fabric breaks, loosening of inside cords by running on soft or flat tires, blowouts at high speed, overload, underinflation and over-inflation, rim bruises, tread separation, deterioration from oil on garage floors, and from excessive sunlight or heat.

TESTING METAL COATINGS

Procedure Explained That Makes Determinations a Matter of Days

THROUGH the use of a new testing technique which makes use of extremely thin iron foil, an indication of the value of metal-protective finishes under severe conditions frequently encountered in practice can now be had in a matter of days in comparison with months for ordinary exposure tests.

This new technique was described in a paper by Drs. G. D. Patterson and C. K. Sloan of the Du Pont Company before the American Chemical Society in Pittsburgh. It involves the use of thin, uniform films of paint applied to small sheets of iron foil about one two-thousandths of an inch thick, a fraction of the thickness of the paper on which this is printed. The film of finish to be tested is about one thousandth of an inch in thickness.

To facilitate handling and observation, the thin iron foil is attached by a colorless resin to a glass microscope slide—one inch by three inches—after which a thin film of the paint to be tested is brushed on the upper surface of the metal foil.

These tiny test panels are then exposed to a carefully controlled, humid atmosphere in the laboratory, which results in rapid rusting of the metal foil underneath the thin paint film in much the same way that painted structural steel would ultimately rust under actual conditions of service. The time that elapses before visible rust spots develop on the iron foil gives an indi-

(*Continued on page* 292)

EXTRA MARGIN OF SAFETY—

SIGNODE System of Steel Strapping

Signode Steel Strapping Meets All Federal Strapping Specifications

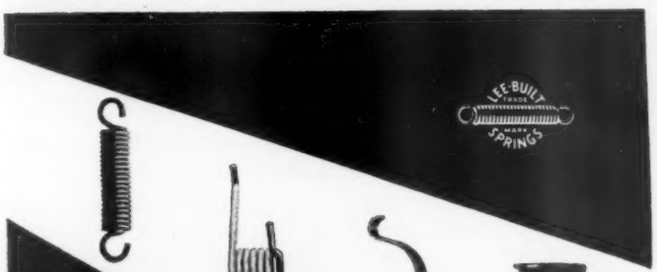
● Daily, more war shipments are being Signode Strapped as manufacturers, keen to deliver the goods, come to appreciate the additional margin of safety that this strapping gives.

No matter what your product or your shipping problem may be, Signode package and carloading engineers stand qualified to give you practical shipping suggestions. Signode representatives have already specified, or given constructive advice, on a great many types of war shipments .

A nearby Signode representative is ready to help assure safe delivery of your vital war materials—no matter what *your* shipping problem or your product may be.

SIGNODE

STEEL STRAPPING COMPANY
2602 N. Western Ave., Chicago, Ill.
Brooklyn, N. Y.: 371 Furman St. San Francisco, Calif.: 484 Bryant St.
REPRESENTATIVES IN PRINCIPAL CITIES THROUGHOUT UNITED STATES AND CANADA



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Quality Springs

LEE SPRING COMPANY, Inc.
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Since 1912 we have been direct importers of fine diamonds. Our values are outstanding. Selections sent for inspection without obligation.

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THE
CHICAGO
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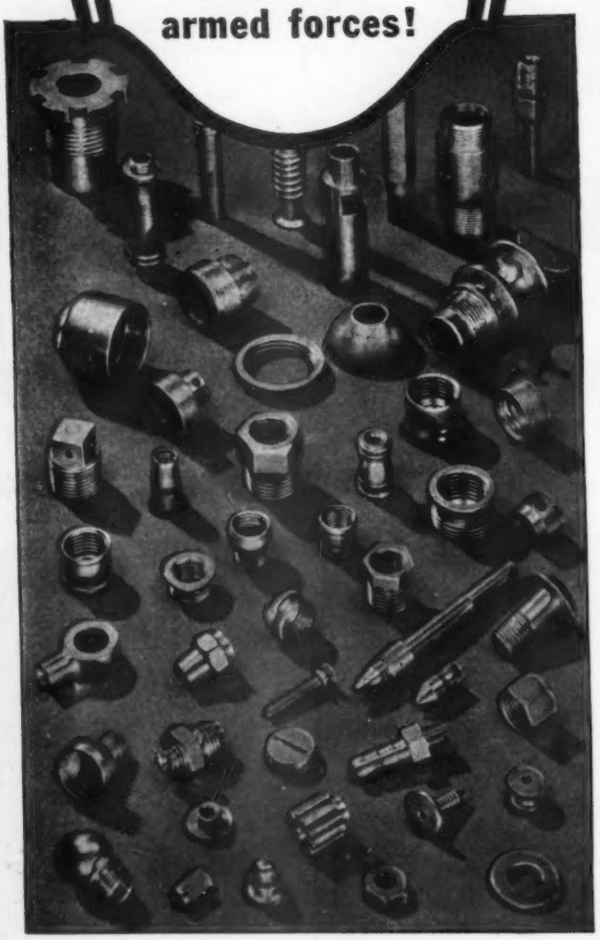
CO.
serves the
armed forces!



(Above illustration reproduced in miniature)

"CHICAGO QUALITY"
SCREW MACHINE PRODUCTS

We are turning out Brass Screw Machine Products by the millions—to exacting specifications for tolerances and "finish"—for our fighting forces.

Our unsurpassed facilities—under constant metallurgical control—guarantee our products meeting the highest standards required by "AIRCRAFT QUALITY"!

THE CHICAGO SCREW CO.
ESTABLISHED 1872
1026 So. HOMAN AVENUE CHICAGO, ILL.

(Continued from page 290)

cation of the degree of protection afforded by the paint being tested.

With such extremely thin foils, the slightest rusting eats a hole through the metal, which can easily be detected by looking at the test panel from the back. With ordinary films laid down on steel panels of the type normally used for testing, no evidence of failure would probably appear until rather severe corrosion of the metal had resulted in partial or complete break-down of the paint film. With a good finish, this might require a year or more.

This new technique for the evaluation of metal-protective finishes represents a close approximation to a hypothetical testing technique long looked upon as ideal—namely, a system involving the finish being studied and only the surface of a metal test panel.

The metal foil used in this new type of test may be regarded simply as a "surface," since it is only about one seventy-fifth as thick as normal automobile body steel of the type commonly used for testing metal-protective finishes.

The evaluation of pigmented coating compositions for the maintenance of structural steel surfaces against atmospheric corrosion has long been recognized as one of the most difficult fields of testing, because of the many and complex variables encountered.

While the recently-devised technique will not dispense with long-time fence and field tests necessary to determine the protection a finish will afford under actual service conditions, it will greatly facilitate testing by making it possible to reject inherently poor finishes before expensive and time-consuming field tests have been made.

This new testing technique is in active use in connection with the development of rust-inhibitive pigments for metal-protective finishes.

HEDGE AGAINST UNEMPLOYMENT

Slow War Production Decline and Civilian Needs Minimize Unemployment Dangers

AN unprecedented shortage of civilian goods throughout the world, along with the fact that most American manufacturers are prepared to convert to peacetime production quicker than they were able to get into war production, is America's best assurance of a "hedge" against widespread unemployment after the war, it was announced today by Howard E. Blood, president of Norge Division of Borg-Warner Corporation.

"The competitive spirit for a share of the postwar markets is extraordinarily strong and this in itself will prove to be a very important factor in helping to quickly absorb many thousands of war workers displaced by the cessation of war production," Mr. Blood said.

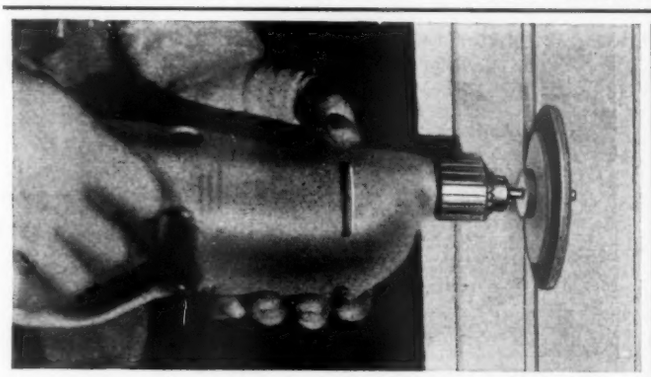
Discussing a recent estimate of the postwar division of the Bureau of Labor Statistics that 12,000,000 persons may be unemployed six months after the war ends, Mr. Blood, who is chairman of the sub-committee on postwar distribution for the National Association of Manufacturers, said that war production requirements will decline gradually rather than abruptly because of mounting indications of a gradual tapering off of the war—with the collapse of Germany first and a longer fight with Japan.

"Most industrial organizations will attempt to retain their skilled workers for peacetime production, which

(Continued on page 294)

CANVAS PRODUCTS

canvas banners · Drop cloths · RESTRAINT JACKETS · Canvas Aprons · FURNITURE COVERS · Instrument Covers · TUB COVERS · hatch covers · tents · CASH BAGS · TOOL KITS · Equipment Covers · TOTE BAGS · Duffle Bags · floor covers · Automobile Covers · cab curtains · BEDDING ROLLS · canvas slings · Mail Bags · MADE TO ORDER · Shop Baskets · COAL BAGS · TUB COVERS · ship and boat awnings · COT COVERS · SHOWER BATH CURTAINS · MACHINERY COVERS · DRY KILN COVERS · tarpaulins · WATERHOUSE COMPANY WEBSTER, MASS. · GROUND CLOTHS · shipping bags · FLOOR COVERS · Laundry Baskets · SHOWER BATH CURTAINS



Do Your DE-BURRING with 1943 METHODS AND MATERIALS!

Here is one of the cases where all in one de-burring, finishing and polishing jobs have been accomplished in a single operation by Brightboy.

Time and work savings plus a smooth, precision finish which frequently serves as a final polish are achieved through Brightboy's original composition—resilient *rubber* impregnated throughout with abrasive.

Try Brightboy. Time the operation, compare the results. Write us if your dealer cannot supply you with Brightboy METHODS AND APPLICATIONS DATA, prices, catalogs. Our field men are at your service.

BRIGHTBOY INDUSTRIAL DIVISION
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I'M GLAD WE BOUGHT
ORANGE CORE
Sealing Tape

Thousands of shippers everywhere are particularly glad they bought Orange Core because they have found it the speediest, the stickiest, and the sturdiest of tapes. Right now, you may not be able to obtain all the Orange Core you need. But when the present emergency is over, we know that those who have used Orange Core during these hectic days will insist upon having it always. "America's Most Popular Brand" will be more popular than ever!

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We Can't Give You Anything but HATE

Reliable

We hate war, but we hate dictators more. Right now, helping to exterminate phoney supermen who fight to dominate the world is our main job. Reliable Springs by the millions have gone into vital combat and war production equipment of all types. Reliable workers, both men and women, have given valiantly and unstintingly of their strength to help turn out more and better springs — faster and faster. The urgency of this huge task has literally kept our people's noses to the grinders, their hands, eyes, minds, attuned to coilers, formers, testers, and all the other equipment of fine spring-making. The result is springs of extreme precision and almost incredible accuracy in action, under the excessive stresses of war.

The school of war is a tough school. When Peace again prevails, Reliable will be even better prepared than before to serve your customary requirements.

Send us your specifications and drawings.

The Reliable Spring & Wire Forms Co.
3167 Fulton Rd. Cleveland, O.
Representatives in Principal Cities

YOU CAN RELY ON Reliable Springs
ROUND AND FLAT WIRE SPRINGS · CLIPS · HOOKS · BENDS · LIGHT STAMPINGS

(*Continued from page 292*)

they will swing into just as rapidly as the government will permit," he said. "Other workers released by declining war production will be absorbed by many lines of so-called non-essential industries which were forced to curtail or suspend because of priorities on war materials. Public service enterprises, such as laundries, besides mercantile and distributing groups, have suffered severely from lack of personnel. This condition and the fact that almost every important industrial unit has prepared comprehensive plans for large scale post-war schedules is certain to greatly minimize the dangers of wide unemployment after the war."

Mr. Blood pointed out also that most cities, counties and states are adopting broad-gaged programs for after war needs, besides important work the federal government is doing along this line.

"Sensibly planned and badly needed public works will do much to absorb any surpluses of both skilled and unskilled labor which might develop," he added.

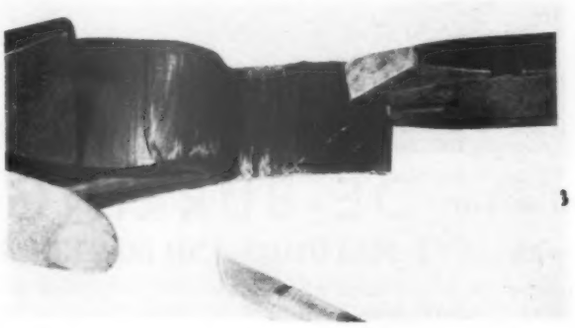
He declared that the Detroit and Muskegon plants of Norge Division, which are engaged in producing more than 40 different war materials for the armed services, will lose no time in resuming the production of refrigerators, washers, ranges and other household appliances after official Washington gives consent.

UNUSUAL BONDING MATERIAL

Unites Metal to Metal—Rubber, Plastics, Leather or Wood to Metal or Each Other

A NEW bonding process that unites metals with a bond stronger than riveting or spot welding, and that joins rubber, synthetic rubber, plastics, leather or wood, to metal, or to each other with a bond stronger than the materials themselves, has been announced by The U.S. Stoneware Company, manufacturers of Tygon plastic materials and corrosion-resistant industrial equipment.

Already in use for vital war applications the new



method (known as the Reanite Bonding Process) is expected to find literally thousands of peace-time uses. Engineers have long sought a fool-proof method of uniting dissimilar materials in order to utilize to the full the physical properties of each—for example, to combine the lightness and insulating value of plywood with the permanence, strength and beauty of stainless steel.

Such fabrication is an actuality with the Reanite Process. Thin sheets of stainless steel, or aluminum, can be bonded to Tygon impregnated plywood to form light weight, fire-proof, waterproof structural assemblies for pre-fabricated housing units, boats, airplane or motor car assemblies, kitchen cabinets, refrigerators,

(*Continued on page 296*)

THE CENTRAL *Certified Accuracy* MICROMETER

Immediate Delivery

All sizes from one inch to six inches available for immediate delivery from stock.

★

Central *Certified Accuracy* Micrometers May Be Purchased singly or in de luxe sets. Write for illustrated catalog.

CENTRAL
FOR MORE THAN A QUARTER CENTURY SPECIALISTS IN FINE MICROMETERS
CERTIFIED ACCURACY
THE CENTRAL Certified Accuracy MICROMETER
GUARANTEE
This micrometer is triple tested and is guaranteed accurate. If for any reason you are dissatisfied with this tool, return it with this guarantee within 30 days of purchase date to dealer from whom you purchased, and full purchase price will be refunded.
This guarantee, of course, is void in case of breakage, abuse, accident or other cause not inherent in the tool itself.
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MICROMETERS OF CERTIFIED ACCURACY
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There is no time to experiment when you need sprockets for essential war work.

Cullman Wheel Company carries more than 50,000 sprockets in stock---and can make them to your specifications quickly and economically. When you order Cullman Sprockets, you get the benefit of specialized equipment and experience---with consequent savings.

Write for booklet giving necessary information for sprocket users.

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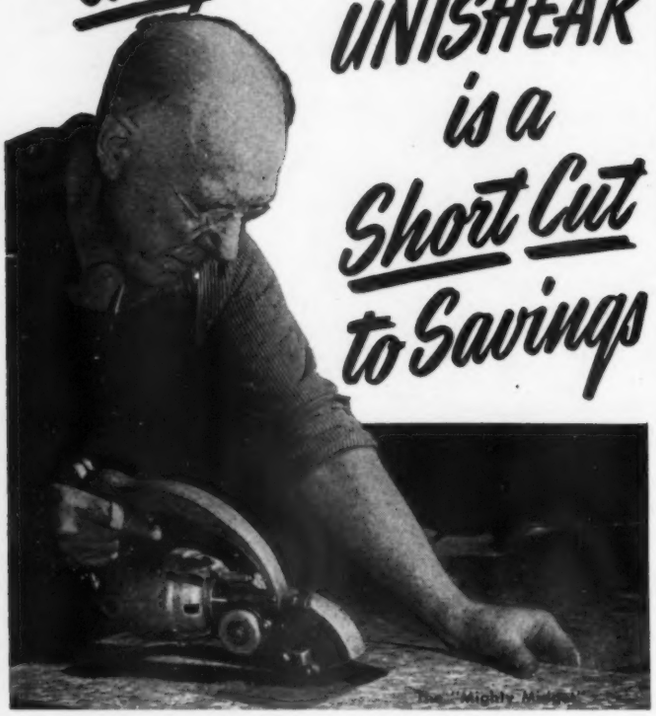
ALLEN Products stand up to the stresses in war-driven machines *and* die assemblies. They hold parts together *"under fire"*, — preserve the strength and unity of each assembly. . . The well-informed Purchasing Official needs a handy, charted reference to Allen SPECIFICATIONS. 10-page Bulletin *awaits your request:*—includes standard dimensions of Allen Hollow Set Screws, Square Head Set Screws, Socket Head Cap Screws, Flat Head Cap Screws, Socket Head (*"Tru-Ground"*) Shoulder Screws, "Tru-Ground" Dowel Pins, Hexagonal Keys, Hollow Pipe Plugs. Send for this Data-bulletin today.

ALLEN Products sold only through local Allen Distributors.

THE ALLEN MFG. COMPANY

HARTFORD, CONNECTICUT, U. S. A.

Any Cut with a UNISHEAR is a Short Cut to Savings



SAVE WORK The Stanley "Mighty Midget" and No. 16A portable Unishears are perfectly balanced, easier to handle than snips. Both men and women can cut more metal per day with less fatigue.

SAVE TIME Stanley Unishears cut *fast* – up to 15 feet per minute. Follow any line, cut any shape with hair-line accuracy – straight cuts, curves, angles, small radii. Just plug in wherever the job is – saves moving the work about the shop.

SAVE METAL Unishears leave smooth edges that require no further finishing. There's no distortion of the metal – no waste.

Unishears are helping many war plants make short cuts to new speed records on sheet metal fabrication. Portable models handle up to 12 gauge hot rolled steel – stationary models up to 10 gauge. Stanley Electric Tool Div., The Stanley Works, 178 Elm St., New Britain, Conn.

1843 STANLEY 1943

STANLEY UNISHEARS

The Electrically Driven Hand Shears

No. 16A Unishears

(*Continued from page* 294)

furniture, etc. Composite metal and plastic parts may be molded; rubber and metal spring assemblies for smooth, soft, quiet and vibration-free riding are reasonable likelihood.

Repeated laboratory and field tests indicate that it would require a direct pull in excess of 30,000 pounds to separate two six inch square pieces of steel bonded with Reanite. On standard tensile testing machines it was found that Reanite develops a bond—metal to metal—ranging from 1000#s per square inch to as high as 3000#s per square inch. The bond developed between rubber and metal runs anywhere from 900#s to as high as 1500#s per square inch, compared with an average of 250-400#s for bonds obtained by present conventional methods. On repeated tests of bonds formed between natural rubber, synthetic rubber, plastics, leather and wood, the materials themselves gave way before the bond.

Application of the Reanite Process is simple. The surfaces to be joined are brushed, sprayed or dipped with Reanite. After drying, mild heat and pressure is applied.

The Reanite joint is unaffected by fresh or salt water, is non-corrosive to metals, possesses excellent corrosion-resistance in itself, and high dielectric strength.

Present uses include fabrication of airplane sub-assemblies, motor mounts, sound and vibration dampener units, instrument mounts, bonding rubber or plastic isulation to wire or cable, and others.

GLASS INSPECTION GAGES

GAGES are usually made of tool steel, but recent experiments by Army Ordnance and by glass manufacturers indicate that at least 50 percent of the steel gages could be replaced with glass. An experimental glass gage performed 260,000 gaging operations before it wore out; wear was only 0.00005 in. after the first 160,000 operations. A steel gage for this duty normally had a life of about 65,000 operations. There are other advantages in the use of glass gages: perspiration has no corrosive effect, and the gage need not be protected from rust; greater visibility is afforded the inspector; heat transferred from the inspector's hands has less effect on the gaging dimensions since the thermal expansion of glass is less than that of steel; glass is about 1/3 the weight of steel, and lighter gages are more easily handled; scratches do not raise burrs or change the effective size of the gage; there is less tendency for the component to seize or gall in or on the glass gage when the component is very near the size of the gage. The substitution of glass would require little, if any, change in the machines now used for grinding steel gages.

RECOVERY OF PAINT OVERSPRAY

SPRAY-PAINTING is the most common method of finishing implements of war produced on the assembly line. More than one-third of the paint may be lost by this method, but most of this "overspray" can be recovered. Within the past decade, one company developed a process by which, in the year 1940 alone, it recovered 60,000 gallons of paint, or 95 percent of the overspray. In the entire country, almost 3,000,000 gallons of paint are estimated to have been reclaimed since the perfection of the process. About 40 manufacturers

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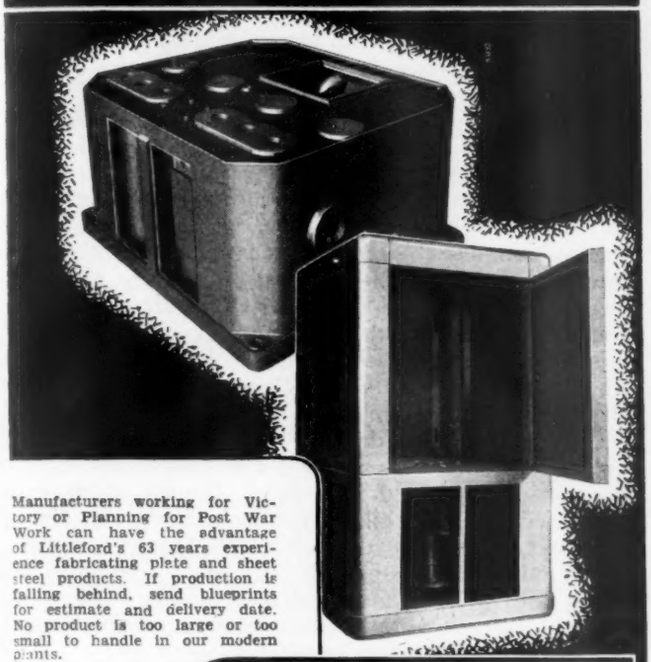
FABRICATORS OF
PLATE AND SHEET STEEL



Manufacturers working for Victory or Planning for Post War Work can have the advantage of Littleford's 63 years experience fabricating plate and sheet steel products. If production is falling behind, send blueprints for estimate and delivery date. No product is too large or too small to handle in our modern plants.

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2. When you are in a hurry for a pound of chemicals to run a laboratory test, or for a carload of chemicals to use in your production, you can depend on Harshaw to save time by expediting your order—all the way to your dock, if necessary.

For your convenience, the 32-page booklet illustrated above contains a representative list of the commodities Harshaw has been supplying, together with the addresses and phone numbers of Harshaw branches and representatives. Copies are free for the asking.

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Irvington's Extruded Plastic Tubings are steadily gaining wider acceptance by manufacturers of electrical and other types of equipment as a replacement for rubber or metal tubing. In addition to better serving their primary purpose, that of electrical insulation, in many cases these tubings have other advantages over the materials replaced.

As an instance – Irvington Tubings have better flexibility and resiliency than most rubbers at low temperatures – one type is transparent–still another has the high tensile strength of 3000 lbs. per sq. in.

All Irvington Plastic Tubings have excellent dielectric and tensile strengths, resistance to acids, alkalies, oils, moisture and many solvents – do not support combustion. Each one has specific qualities which make it an ideal insulation for particular conditions.

Here is a list of Irvington Plastic Tubings and a brief statement of their outstanding characteristics.

HYFLEX

A rubber-like tubing with high resistance to abrasion – good chemical stability – does not become brittle at –58 deg. F. Obtainable in six opaque colors.

IRV-O-LITE Most widely used tubing – for wiring and lug insulation or as conduit. Two types, both available in six opaque colors – XTE-30 for all-around usage; XTE-130 for applications involving higher temperatures, greater dielectric and tensile strengths.

IVI-FLEX

Developed for use at extremely low temperatures; withstands a hammer blow at –70 deg. F., can be pinched at –80 deg. F. – especially flexible and elastic.

TRANSFLEX Transparency permits quick tracing of circuits or location of wire breaks when used as conduit – unusual elongation permits stretching over splices, lugs and other projections – does not become brittle at –58 deg. F.

Let Irvington help solve your insulating tubing problem. For complete data and test samples write Dept. 76.

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PLANTS AT IRVINGTON, N. J. and HAMILTON, ONT. CAN.
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(*Continued from page 296*)

of paint and related products now have equipment for reconverting into usable paint the overspray collected in water-wash spray booths.

The Industrial Salvage Branch of the War Production Board has drawn up recommendations for the recovery of overspray. It advises that two types of overspray should not be mixed. Contamination of overspray with foreign materials should be avoided. Dried overspray, such as scrapings and sweepings, should not be added to the water wet overspray which is to be reclaimed. Collected overspray should be kept under water at all times to prevent oxidation. It is desirable for this reason to remove overspray from the tanks at regular and frequent intervals—for example, during the lunch period or at the end of each shift. Only a minimum amount of spray-booth compound should be added to the water, since the use of such chemicals may adversely affect the quality of the reclaimed paint. Collected overspray should be returned to the paint manufacturer in clean, open-head drums; the drums in which the original material was shipped are satisfactory if they are not contaminated with skins. Drums which have contained asphalt or oil will contaminate the material so that successful reclamation is impossible. To prevent oxidation, it is necessary to cover the overspray in the drum with at least four inches of water. Overspray should be processed shortly after recovery and it should not be stored in places where temperature is above normal.

GLYCERINE'S ROLE IN THE WAR

Why Many Normal Uses Have Been Drastically Curtailed

A RECENT release of the Office of War Information and the War Production Board, contains a most indicative report on glycerine and its importance and position in the war effort. This report makes it evident why glycerine is so vital and why civilian uses must necessarily be curtailed.

"Glycerin, simple component of hundreds of civilian products," says the release, "was drafted early in this war, not only for the explosive compound (nitroglycerine), but in many and varied military uses."

Among these uses is glycerine's place in medicinal preparations. In the Army, glycerine ranks second only to alcohol as a solvent in medicinal solutions, and glycerine is used in many types of surgical dressings. Aside from these uses, glycerine has many other indirect military requirements. Thus the dull camouflage coatings on tanks and planes require large quantities of glycerine as do the special coatings used to protect sea-planes against the corrosive action of salt, water, wind and weather.

Cellophane made with glycerine is restricted to those military uses where durability is a main factor as a packaging agent for food, where the toxic quality of glycerine substitutes prohibits their use. The most durable forms of cellophane go into capes for army personnel as a protection against possible mustard gas attack. Glycerine-containing glassine and greaseproof papers are restricted entirely to ordnance and food packaging. In the textile and leather fields, glycerine is a vital necessity to military dyes, as a leather softener, and as an adhesive in the manufacture of shoes.

"In the Navy," says the report, "the versatile nature of glycerin makes it irreplaceable in gun recoil mechanisms, in hydraulic control mechanisms and other equipment, in ship's steering gears and compasses, and again in the protective coatings for ships parts and guns."

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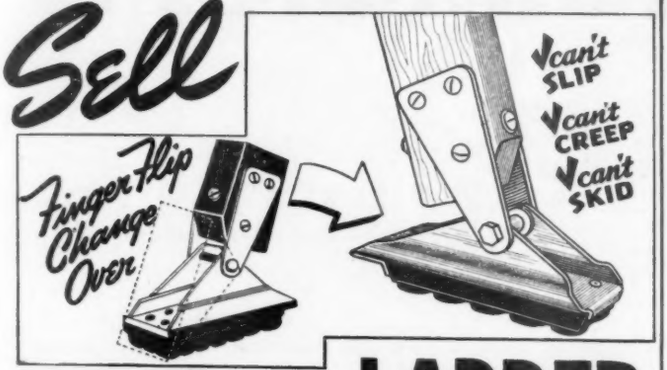

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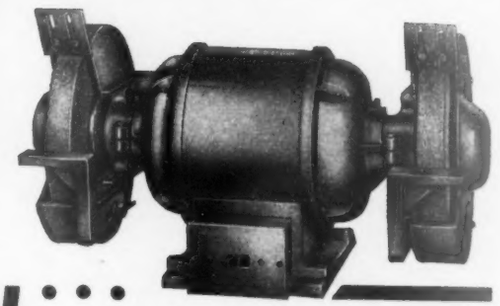

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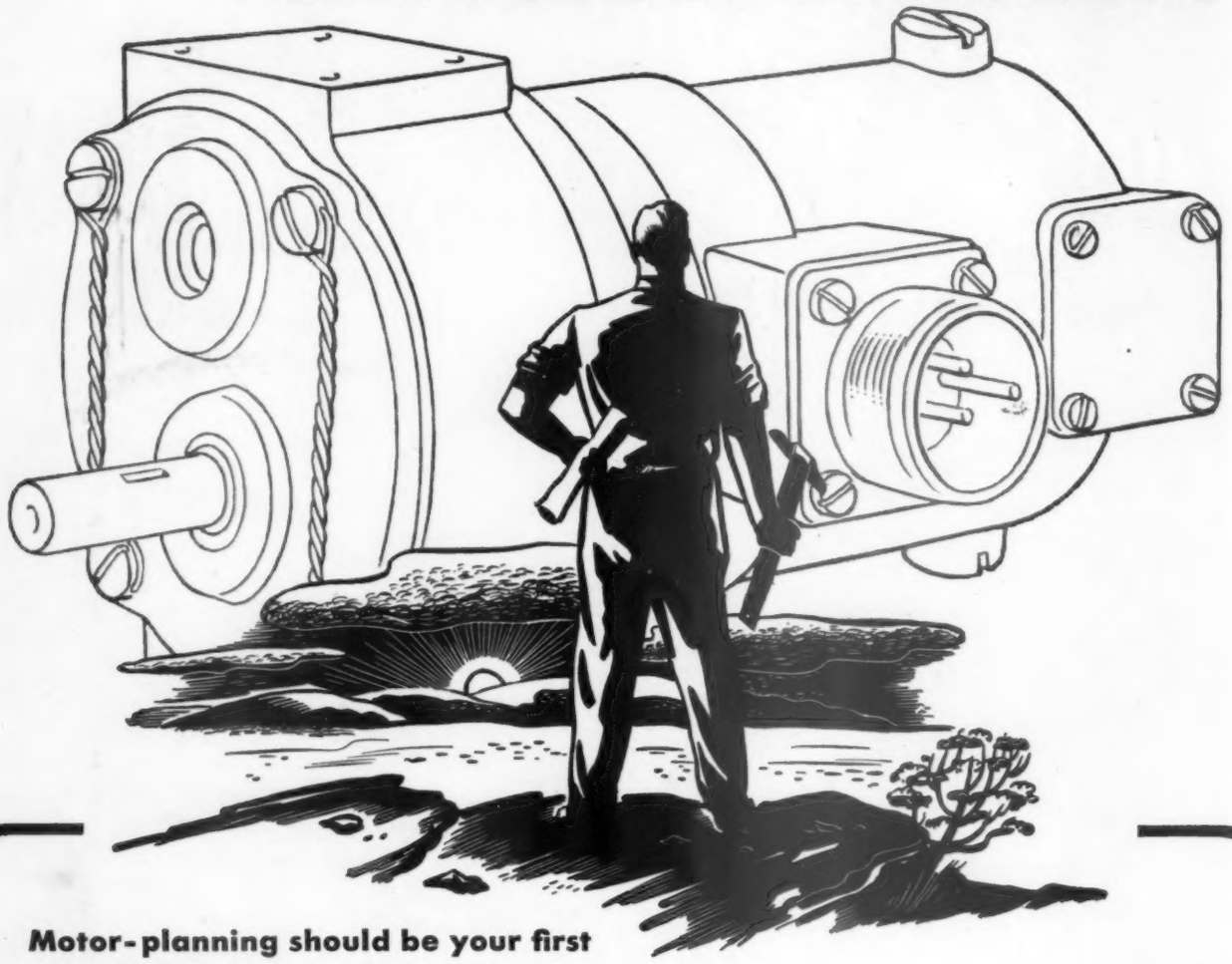
ESTABLISHED 1853

A BROADENED HORIZON FOR PRODUCT DESIGNERS!



Motor-planning should be your first step in Post-War Engineering!

Aside from all considerations of new materials, new applications of electronics or other scientific discoveries, every motor-driven appliance to be built for peace-time use will be influenced greatly by the revolutionary developments in motor design and performance possibilities taking place right now! The supremacy of American fighting aircraft is being materially advanced through the perfection of accessory devices, such as de-icers, ammunition boosters and landing gear mechanisms, which are driven by small, light electric motors.

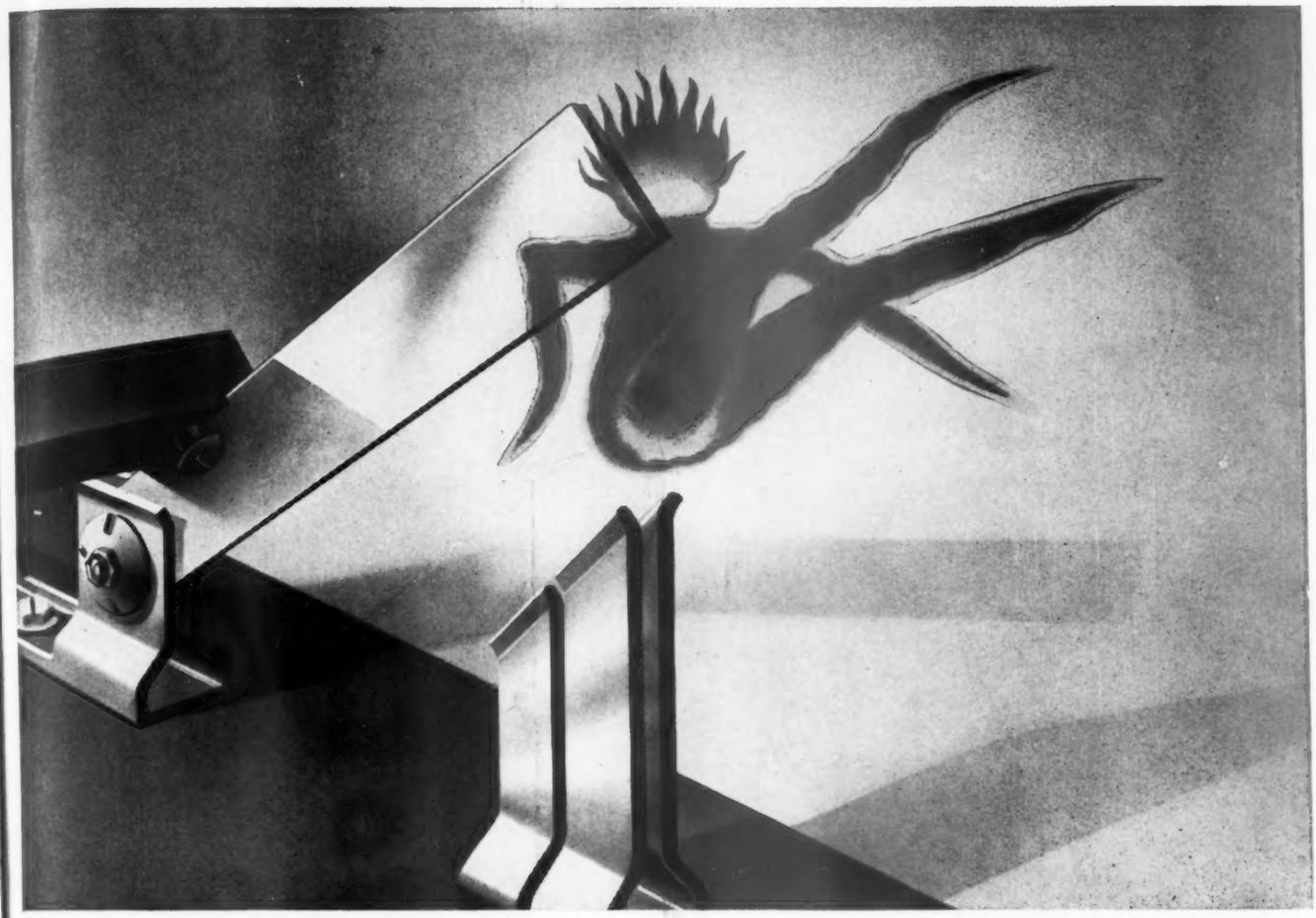
Dumore engineers, concentrating on aircraft applications, have perfected more than thirty different fractional horsepower motors, with a variety of special features, but all necessarily conforming to extreme limitations as to weight, space and power. The performance of these motors under severe combat conditions has also proved the outstanding reliability of Dumore construction.

Motors like these will be available to power the appliances which will be made and sold after the war. Dumore engineers who developed them will gladly help you to "Motor-Plan" your post-war products, to incorporate the utmost in power, endurance and salability! Consult us freely—without obligation. The Dumore Company, Motor Division, Racine, Wisconsin.

Dumore

Headquarters for
FRACTIONAL HORSEPOWER MOTORS

"MOTOR-PLAN" TOMORROW'S PRODUCTS WITH DUMORE!



hot arcs get the point Quick!

Arcs burn with terrific heat when they leap between opening contacts. The heavier the load... the hotter they burn. Switch contacts get badly pitted and burnt, unless the arc is both controlled and extinguished, *quick*.

Westinghouse Safety Switches eliminate this source of trouble. The diamond-pointed jaw carries the arc outside the contact area assuring long contact life.

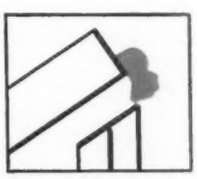
On Safety Switches, 575 and 600 volts, Westinghouse adds another protective plus—the "De-ion" arc quencher. This exclusive feature draws the arc up into the grids—divides and extinguishes it in the blink of an eye.

These advantages mean better, more dependable protection. Contacts stay clean, last longer. Time-outs for maintenance and inspection reduced.

Protect your important circuits with Westinghouse Safety Switches. Ratings up to 1200 amps, 600 volts. Call your Westinghouse representative today. Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa., Dept. 7-N.

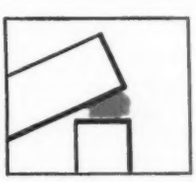
J-21266

LIKE THIS



Diamond-pointed break jaws confine arcing to the point... force the arc to break outside the current carrying areas. Contact surfaces stay clean, don't pit and burn.

NOT LIKE THIS



When ordinary safety switches are opened, the arc leaps across the contact areas . . . along the jaw and blade. It hangs on longer, burns and pits the contact surfaces.

Westinghouse

PLANTS IN 25 CITIES... OFFICES EVERYWHERE

SAFETY SWITCHES

Composite Picture of the Industrial Distributor

If the pictures of all America's Industrial Distributors were combined in one, it might well show a remarkable resemblance to the owl.

Your Distributor has to be *wise* as the proverbial owl to answer correctly all the perplexing supply questions fired at him every day. He has to *see* like an owl, when the delivery picture is darkest, to find the goods you need. Like an owl, too, he's often on the job when most people are asleep.

Although they do have much in common, there is one thing definitely un-owlish about your Industrial Distributor . . . his disposition. He cheerfully puts in extra time and effort to help you keep production humming, because he knows the importance of every hour he can save.

He can serve you today in many ways directly keyed to wartime conditions in the supply field.

Buying Consultant He has complete information on every source of supply at his fingertips. If specified equipment is not to be had, he can help you revise designs to utilize available substitutes.

Priority Expert He has up-to-the-minute data to assist you in getting the best possible rating for your orders.

Salvage Specialist He can provide the repair parts and service to put irreplaceable equipment back on the job.

Conservation Consultant He has the "know how" to suggest effective methods of servicing operating equipment . . . to get better performance, and make it last for the duration.

For *any* service related to supply, you can rely on the wholehearted, resourceful cooperation of your Industrial Distributor.

Jenkins Distributors will give you any information you need about valve procurement and maintenance.

Jenkins Bros., 80 White Street, New York 13, N. Y.; Bridgeport, Conn.; Atlanta, Ga.; Boston, Mass.; Philadelphia, Pa.; Chicago, Ill. Jenkins Bros., Ltd., Montreal; London, Eng.

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For every industrial, engineering, marine and power plant service . . . in Bronze, Iron, Cast Steel and Corrosion-Resisting Alloys . . . 125 to 600 lbs. pressure.